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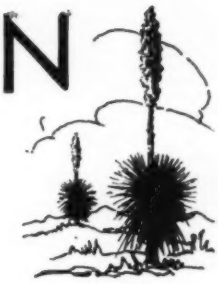

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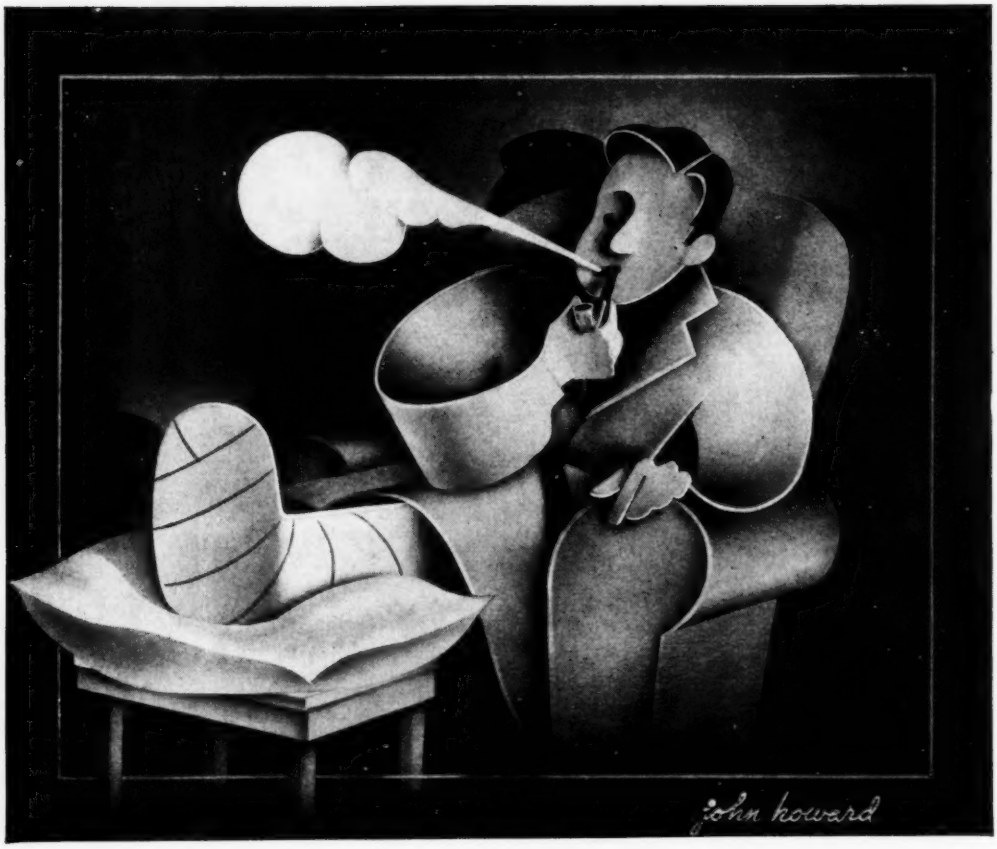

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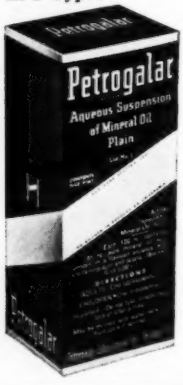

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Vol. XXV EL PASO, TEXAS, DECEMBER, 1941 No. 12

Respiratory Tract Obstruction and Its Secondary Effects

THOMAS C. GALLOWAY, M. D.
Evanston, Illinois

WITHOUT much analysis of the more profound effects of respiratory obstruction it is often considered that the only important results are dyspnea, increased respiratory effort, increase of the rate and stroke output of the heart and, unless relief is given, asphyxia or cardiac and general exhaustion. The picture is much more complex than this.

This discussion will emphasize that more important than the primary obstruction are changes due to increased negative intrathoracic pressure, vascular changes, lower secondary blocking, and superimposed infection. An appreciation of these possibilities should determine the time and type of intervention because once established they may quickly become irreversible.

LARYNGOTRACHEOBRONCHITIS

Because acute laryngotracheobronchitis illustrates most of these factors it will be discussed in some detail. The more familiar facts have been presented by Jackson[1], Baum[2], myself[3] and others. Attention, therefore, will be paid mainly to physiopathology and secondary effects in this disease. Also the similarity wil lbe pointed out to certain primarily mechanically produced conditions, notably injury of the respiratory tract by flame and pulmonary irritant gases. This may also have a bearing on treatment of these conditions.

Previously often overlooked, acute laryngotracheitis should now be easily recognized. Following an apparently ordinary cold a child may develop hoarseness, croupy cough, restlessness, stridor, and then perhaps rapidly increasing obstructive dyspnea with marked cyanosis and rapid pulse or a more serious gray cyanosis. Marked signs of obstruction may be lacking if sedatives have been given or the patient is exhausted, or if the obstruction is low.

The pathology, based on changes many of which are agonal, is not truly represented by postmortem material. The bronchoscopic picture as pointed out by the Jacksons is probably more characteristic. Apparently a descending catarrhal infection occurs followed by congestion, edema and excessive secretion. Plugs, crusting and ulceration may occur, especially after tracheotomy without proper humidification of the inspired air. Schiller,[4] after ruling out agonal changes in his material, considered the condition essentially a cellulitis of the mucosa and submucosa with lymphangitis, edema, white cell infiltration, focal necrosis and vascular changes.

There is much experimental and clinical work, however, to indicate that this is a small part of the picture. A perversion of the normal processes and functions of the whole respiratory tract apparently occurs as shown by the work of Auer[5], Binger and Moore[6], Kernan and Barach[7] and many others.

Galbraith and Steinberg[8] produced bronchial obstruction in healthy dogs by rubber plugs, and demonstrated that marked vascular and secondary changes occur including congestion, stasis, and atelectasis; emphysema, and after secondary infection, pneumonitis; and if animals survived, focal necrosis and bronchiectasis. Kernan and Barach emphasized the importance of the circulatory changes including congestion, stasis, edema, exudation and capillary hemorrhage. Auer pointed out in 1918 "that each alveolus which is in connection with a stenosed bronchus or bronchiole will act like a miniature dry cup during inspiration because the pressure

(Read before Southwestern Medical Association, El Paso, November 20-22, 1941.

in these alveoli will decrease as the intrathoracic pressure decreases during each inspiration."

Kernan and Barach state the sequence as follows: "as a result of the continued obstruction and the elevated negative pressure in the chest, blood enters the right chamber of the heart and lungs more freely, but it is retarded in its departure from the lungs into the left heart as a result of the backward suction pressure on the left ventricle as it delivers blood into the extra thoracic oarta. The elevated negative pressure within the chest exercises suction on the capillary walls which is the important factor in the production of intra-alveolar exudate." Air absorption or escape leads to atelectasis; the alveolar walls weakened by capillary damage give way on over stretching by the increased negative intrathoracic pressure with the production of emphysema. Trapping of air by ball or check valve action of plugs may also be a factor in emphysema. Increasingly greater respiratory effort keeps up a vicious circle.

It was shown by Galbraith and Steinberg, and by Winternitz[9] and others working with war gases that when atelectasis and fluid or exudate in the bronchioles persist for a period of one or two days infection is inevitably superimposed with penumonitis or atypical pneumonias and later effects such as focal necrosis, gangrene and bronchiectasis.

It has seemed to me that the infecting organism is not of primary importance and there are great diversities in bacteriological reports in tracheobronchitis. Bradford and Leahy[10] with a careful plating technic found the green forming streptococci in a large majority of cases with less than 5% of cases or predominantly hemolytic streptococci. In a series at Cook County Hospital in which plates were used to prevent over-growth by organisms fore active culturally, but less numerous, green forming streptococci predominated. That has been true in a majority of my cases. The very sticky exudate characteristic of inflammations due to this organism might provide the mechanical factor important in producing both high and low obstruction in the respiratory tree with its sequences.

If one observes the gross and histological picture present at the same stages there will be observed a great correspondence of tracheobronchitis already outlined; of benign plugging of bronchi in laboratory animals; flame injuries to the respiratory tract; and poisoning by war gases. That might imply that after all the mechanical factors are the primary ones, and that the infection is secondary and superimposed, although it is important and may determine the outcome in cases surviving the early period.

If it is true that when obstruction reaches a certain stage negative intrathoracic pressure rises rapidly and changes are initiated which rather rapidly become irreversible, then it is clear that intervention must not be too long delayed. If in acute laryngotracheobronchitis in spite of rest, oxygen and fluids, improvement does not come or the condition grows worse then tracheotomy must be done soon before irreparable damage is done and before the patient and his heart are exhausted. I doubt that I intervene more often than previously, but I now almost shudder to think how desperate I previously allowed the patient's state to become before I demanded that the pediatrician let me proceed. Now both of us, thanks to our mutual education, feel the same way about delay.

Treatment of acute laryngotracheobronchitis will not be reviewed in detail. It is herewith outlined:

1. Rest—physical and mental—so that minimum oxygen is required.
2. No opiates nor atropine.
3. Oxygen by catheter, hood or tent.
4. Fluids by mouth and parenterally to relieve dehydration and liquefy secretions.
5. Moisture saturated air, especially after tracheotomy to lessen or prevent crusting.
6. Tracheotomy or rarely intubation; not delayed if the foregoing procedures do not soon give relief.
7. Postural drainage and aspiration.
8. Postural irrigation if secretion, plugs or crusts cause blocking.
9. Bronchoscopic removal of crusts if necessary.
10. Chemotherapy—especially for secondary infection.
11. Expectorants are questionable. Water parenterally is the best, but three grain doses of iodides seem to help.

Davison's[11] method of mechanically humidifying with the oxygen tent while maintaining a comfortable temperature is very valuable.

Recent work of Holinger, Basch and Poncher[12] suggests that carbon dioxide not only aids in increasing the rate and depth of respiration, but is efficient in liquefying secretions.

Postural drainage demands especial emphasis. The excessive secertion whether purely inflammatory or in considerable part due to secondary vascular effects is probably at first fairly liquid. If cough, tussive squeeze, and ciliary action are impaired it is important that gravity should be used to move secretion toward the tracheal opening where it can be coughed out or removed by aspiration and irrigation or bronchoscopy.

Winternitz showed that the whole pulmonary tract could be flooded with isotonic solutions for a considerable time without damage. Gittins,[13] Richards[14], Stitt[15] and Minter[16] and many others have used large quantities of fluid for lavage of the tracheobronchial tree and larynx. This has seemed most valuable in the obstructive cases with thick secretion when combined with postural drainage to remove crusts, plugs and secretion, and now I seldom have to remove plugs by bronchoscopy.

Irrigation is well tolerated and by its use the removal of plugs is much simpler and more effective as a rule than by the bronchoscope. I have used 4 to 15 cc. of 3 to 5 per cent soda bicarbonate instilled during inspiration with the patient turned on the side which the stethescope shows blocked. Vigorous coughing churns this over plugs or crusts which are loosened and expelled or removed with suction. Normal saline is then used to wash out the soda. Occasionally 1:10,000 adrenalin in small amounts is also instilled to reduce turgescence. Such treatment must be closely supervised, but much of it can be left to a good resident or intern and nurse. Since reading Winternitz reports I shall not hesitate to use considerably larger quantities of irrigating fluid. Probably 2% solution of soda bicarbonate would be preferable according to Winternitz's experiments, and he suggests that it should be a truly buffered solution.

Various processes may be initiated by obstruction of the tracheobronchial tree. Their nature will depend on the type and level of the obstruction, the suddenness, the completeness, the extent of the blocked area, the character of the infection present and the age and general condition of the patient.

Because acute laryngotracheitis occurs in very young children whose lax tissues, especially subglottically permit great swelling and obstruction it presents perhaps the extreme picture. A large number of agents may present varying degrees of the same process, including simple edema from iodides, cardiovascular renal disease and gout; allergies with edema, spasm, and plugs; acute infections, especially diphtheria, abscesses within and without the airway, acute laryngotracheobronchitis; chronic infections especially with glands or granulomata; trauma from instruments, caustics, gases, flame, fractures and irradiation; foreign bodies; tumors; paralyses; and asphyxia neonatorum which is a special case.

OTHER OBSTRUCTIVE STATES

Authors repeatedly speak of pneumonia occuring with obstructive conditions. It is probably doubtful that a true pneumonia does often occur that way. Recent experimental work suggests that a true pneumonia is produced by a different mechanism. Nungester and Jourdonais[17] showed that experimental pneumonia could be caused by introduced bacteria which had to be protected by a clump of mucin. Loesschke[18] demonstrated that from the primary focus edema fluid carries the infection into the open alveoli so that a whole lobe or lobule is involved.

Infection of collapsed lung tissue which occurs as a sequence of obstruction and atelectasis appears to be be quite a different process, with varying possibilities. In Galbraith and Steinberg's experiments already cited, if atelectasis persisted for over twenty-four hours, infection was superimposed producing a pneumonitis. Workers with animals poisoned by war gases found a somewhat similar picture and a correlation of clinical records and post-mortem findings of men dying from pulmonary irritant gases suggest that here the late effects were secondary to late infection.

In Galbraith and Steinberg's obstruction experiments, at post-mortem the infected collapsed lung was infiltrated, largely disorganized, with areas of focal necrosis. If the animal survived long enough, this was followed by lung abscesses, by bronchiectasis, by bronchostenosis in some cases and even by fibrotic organization.

Interest has recently been reviewed in the etiology of bronchietasis. It has often been

assumed that this was a slowly developing process most often due to the continued feeding of a nasal sinusitis and countless operations on the sinuses have been done in that belief. It seems possible, however, that many cases result from a single obstructive episode as the animal experiments cited have shown it can be produced. There are pertinent clinical observations to support that. Perry and King[19] in a careful study of a large group of patients with bronchiectasis found that it was not a progressive process under observation in more than possibly 6% of their cases. Goodale[20] found that a third in his series developed their bronchiectasis before the age of ten. Anspach[21] was able to demonstrate in a considerable number of young patients that the wedge shadow of basal atelectasis had preceded bronchiectasis.

Sinusitis, it is true, does occur in many patients with bronchiectasis. An underlying allergy may have been the link between the two conditions. Watson and Kibler[22] believed that ninety per cent of their bronchiectatic patients were allergic. They state also "the fundamental basis for chronic or recurring sinusitis is commonly an allergic rhinitis" which I believe is fundamentally true. Miller and Piness[23] reported a group of atypical pneumonias in allergic patients where obstruction and atelectasis were present. Allergy has occured in a high per cent of my cases of laryngotracheobronchitis. Certainly in an allergic child with edematous mucosa, bronchial spasm, and tenacious plugs, the conditions are ideal for the production of blocking, atelectasis and a sequence following infection that might result in bronchiectasis. I have slides from an asthmatic child dying of measles encephalitis showing the process going somewhat beyond the stage of pneumonitis.

It is recognized of course that bronchiectasis may be due to many other conditions, as in tuberculosis, foreign body and the like, although here also obstruction and atelectasis are believed by most authors to be part of the process. (Andrus,[24] Holinger and Andrews, etc.)

Probably there is pathology similar to that previously outlined in many cases called atypical pneumonias especially when these are associated with emphysema, shifting roentgenlogic and physical findings and delayed or incomplete resolution. Snow and Cassasas[26] reported such a series during an influenza epidemic and ascribed the findings to obstructive emphysema and atelectasis. Holt reported emphysema in a large percentage of autopsies in bronchopneumonia. Many other authors have noted similar findings. It is also probable that in cases primarily true pneumonia or bronchopneumonia, complicating obstruction with atelectasis and infection can modify the picture.

It must be remembered that a variety of conditions may provide thick secretions or plugs that can cause atelectasis. It is a fairly common experience to find these in whooping cough, measles, asthma, after anesthetics or vomiting or with trauma as from cut throat or laryngeal operations. It has been established also that impaired respiratory movements may allow the accumulation of such material as after abdominal operations and chest injuries, or with the shallow breathing associated with measles encephalitis, and brain injuries and the like.

Other experiments of Galbraith and Steinberg indicate also that even without obstruction if respiratory movements are sufficiently interfered with so that inflation and deflation of the alveoli does not occur, the vascular changes may occur with congestion, stasis, capillary damage and exudation.

FLAME AND GAS EFFECTS

If the conception of obstructive effects is correct, it should have some bearing on the treatment of certain other conditions. For instance in the case of six cases of flame injury I have examined bronchoscopically the picture greatly resembles that of acute infectious tracheobronchitis with low obstruction including retraction, edematous mucosa, thick secretion and plugs, the production of atelectasis and emphysema and a response to tracheotomy, irrigation, and aspiration.

Certain pulmonary irritant gases again have some appearances in common with infectious tracheobronchitis and work now is going forward to determine whether similar treatment may not be effective here. Phosgene is apparently not hydrolyzed before its contact with the moisture in the fine bronchioles or the alveoli themselves with the formation of hydrochloric acid, so the the edema fluid or exudate fills the distant reaches of the pulmonary tract. Hemoconcentration, blocking of the lung capillaries, and heart failure are apparently important

factors in a fatal outcome, but it seems reasonable that postural drainage and probably irrigation might be of considerable help. In mustard gas poisoning the disabling effects are chiefly those on the skin, eyes, etc., but a large percentage of the fatalities are due to pulmonary complications. Here the effects lie high in the trachea with severe burns, plugs and secretions which may obstruct, and it may be also that some of these cases could be similarly treated.

CONCLUSIONS

1. Persisting tracheobronchial obstruction leads to marked secondary changes.

2. These are vascular effects (including congestion, exudate or hemorrhage), and atelectasis.

3. If atelectasis is unrelieved secondary infection leads to pneumonitis, necrosis, fibrosis, and other damage including bronchiectasis.

4. Recognition of obstruction and its proper treatment will prevent these bad effects.

5. Such conditions as injuries of the respiratory tract by flame and irritant gases have much in common with other obstructive states and may be similarly treated.

Northwestern University Medical School.

BIBLIOGRAPHY

1. Jackson, Chevalier, and Jackson, C. L.: Acute Laryngotracheobronchitis, Living Pathology seen in acute respiratory diseases, J. A. M. A. 107 929 (Sept.) 1936.
2. Baum, H. L.: Acute Laryngotracheobronchitis, J. A. M. A. 91:1097 (Oct.) 1928.
3. Galloway, T. C.: Postural Treatment of Acute Laryngotracheobronchitis, J. A. M. A. Vol. 112, No. 16, Page 1566 (April) 1939.
4. Schiller Walter: Personal communication.
5. Auer, John: Localized Pulmonary Edema in Cats after Inhalation of a War Gas, Proc. Soc. Exp. Biol. & Med. 15:106, 1918.
6. Binger and Moore, R. L.: Observations on the Flow of Blood to and from the Lungs, Jour. Exp. Med. 45:655. 1927.
7. Kernan, J. D., and Barach, A. L.: Role of Helium in Cases of Obstructuve Lesions in the Trachea and Larynx, Arch. Otolaryng. 26:419 (Oct.) 1937.
8. Galbraith, E. G., and Steinberg, B.: The Developmental Mechanism of Pulmonary Atelectasis, Ann. Otol. Rhin. & Lryng. 46:800 (Sept.) 1937.
9. Winternitz, W. C.: Pathology of War Gas Poisoning, Yale Univ. Press, 1920.
10. Bradford, W. L., and Leahy, Alice D.: Acute Obstructive Laryngitis: Clinical and Bacteriological Study, Am. Jour. Dis. Child. 40:298 (Aug.) 1930.
11. Davison, F. W.: Treatment of Acute Laryngotracheobronchitis, Archiv. Otolaryng. 32:321 (Aug.) 1940.
12. Holinger, P., and Basch, F. P., and Poncher, H. G.: The Influence of Expectorants and Gases, J. A. M. A. 117:675 (Aug.) 1941.
13. Gittins, T. R.: Laryngitis and Tracheobronchitis in Children, Reference to Nondiphtheritic Infections, Ann. Otol. Rhin. & Laryng. 45:1165 (Dec.) 1936.
14. Richards, L.. Fulminating Laryngotracheobronchitis, Ann. Otol. Rhino. & Laryngo. 42:1014 (Dec.) 1933.
15. Stitt, H. L.: Bronchial Lavage for Disinfection and Immunization of the Bronchial Tree, Jour. Med. 14:576 (Jan.) 1934.
16. Minter, M. M.: Technic of Bronchial Lavage, South M. J. 28:328 (April) 1935.
17. Nungester, W. J., and Jourdonais, L. F.: Mucin as an Aid in the Production of Experimental Pneumonia, J. Infect. Dis. 59:258 (Nov.-Dec.) 1936.
18. Loeschke, H.: Untersuchungen uber die Kruppose Pneumonie, Beitr. z. path. Anat. u. z. allg. Path. 86:201-223 (Jan.) 1931.
19. Perry, K. M. A., and King, D. S.: Bronchiectasis, Am. Rev. Tuberc. 41.531 (May) 1940.
20. Goodale, R. L.. Management of Sinusitis in Cases of Bronchiectasis, Trans. Am. Acad. of Oph. & Otolaryn. (July-Aug.) 1941, Page 236.
21. Anspach, W. E.: Atelectasis and Bronchiectasis in Children: Study of fifty cases presenting triangular shadow at base of lung, Am. Jour. Dis. of Child. 47:1011-1050 (May) 1934.
22. Watson, S. H., and Kibler, C. S.: Bronchiectasis, J. A. M. A. 111:394 (July) 1938.
23. Miller, H., and Piness, G., and Feingold, B., and Friedmann, T. B.: Allergic Bronchopneumonia, Jour. Pediatrics 7:768, (Dec.) 1935.
24. Andrus, P. M.: Bronchiectasis, Analysis of its Causes, Am. Rev. Tuberc. 36:46 (July) 1937.
25. Holinger, P., and Andrews: Bronchial Obstruction, Am. Jour. Surg. 54:193 (Oct.) 1941.
26. Snow, Wm., and Cassasa, C. S. B.: Obstructive Emphysema and Atelectasis in Influenza, J. A. M. A. 109:1886 (Dec.) 1937.
27. Holt, L. E.: The Disease of Infancy and Childhood, New York, D. Appleton & Co., 1926.

Recent Advances in Cancer

E. PAYNE PALMER, M. D.
Phoenix, Arizona

AFTER having studied cancer for half a century I am still fascinated and mystified by the various phases of the disease and by the manifold problems involved. The process of canceration in its final steps still remains uncertain and undetermined.

Since the beginning of this century, active research has played an important role in the advances in cancer. The recent increase in clinical and laboratory facilities for the study of cancer has resulted in very definite advances. From the stimulus of these discoveries further advances can be expected in the near future.

It is a known fact that environmental agencies and stimuli in particular may bring about the development of malignant growths. If an environment is not the cause of cancer, then the cause must be sought among hereditary factors.

Read before Harlow Brooks Memorial Navajo Clinical Conference, Sage Memorial Hospital, Ganado, Arizona, August 25-27, 1941.

AUTHOR'S NOTE: Since reading this paper I have received a letter from Dr. Richard M. Johnson of Detroit in which he states that Dr. Altshuler has given his permission for me to quote, "Neoplastic diseases differ in that the type of cancer influences the nitrogen lost. Lymphoblastomas are associated with a very high urinary nitrogen excretion, sarcomas a moderately high nitrogen excretion, and epithelial cell tumors, such as carcinomas, with a slight or no increase in nitrogen excretion as compared to the normal. In all three types of malignancies the intravenous administration of amino acids is associated with a positive nitrogen balance, a larger amount being necessary to establish nitrogen balance in the presence of lymphoblastomas as compared to other neoplasms". Dr. Ariel, in Dr. C. P. Rhoads' research group at Memorial Hospital in New York City, has found that carcinoma patients develop hypoproteinemia during the period of inability to eat liberal diets during the post-operative period and frequently during the clinical course of the malignancy. By the administration of adequate amounts of amino acids intravenously, this hypoproteinemia can usually be controlled or corrected. They also have been able to maintain positive nitrogen balance in these cases, confirming Dr. Altshuler's work.

A rudimentary tendency toward vegetative reproduction is inherited by every individual; practically every person who lives long enough ought to develop cancer. Some people develop cancer after comparatively few cell divisions at a young age; others develop cancer at an advanced age after numerous cell divisions; on the other hand another group of individuals may develop cancer only if exposed to a very strong irritation after prolonged or repeated applications.

Recent[1] cancer research has been focused more and more upon the chemical changes within the cells. Koegl has pointed out that all chemical constituents of the cells are continuously renewed. Chronic irritation causes distrubances of the system of cellular ferments so that the cells lose the faculty of incorporating the normal amino acids. A synthetic of abnormal proteins occurs; this progresses slowly until the cells become definitely cancerous. The renewal of the proteins takes at least several months. This has been called the precancerous stage. The chemical changes within the cells are the result of invisible disturbances. Fischer-Wasels used the term metastructural changes for them. To describe this chemical disturbance stage as precancerous is the same as using this term for morphological changes. To justify the use of the term precancerous, proof must be available that the chemical and visible changes are capable of both transition to cancer and return to the normal state. At the present time it is not known whether the chemical changes in the cells are inevitably progressive and permanent (obligatorily cancerous) or whether the cells may regain the faculty to produce normal chemical constituents (facultatively cancerous). Only under the latter circumstances would there be logical justification for the use of the term precancer. The interpretation of morphological changes must be considered in the same way.

It[1] is quite possible to set up objective standards for use in such early conditions. The enlargement of nuclei and their size in relation to the cytoplasm may be measured, and this has been done. The disturbance of nuclear form and size is readily seen. The increase in chromatin content may be compared with that of the normal squamous epithelium. Special stains and photographs demonstrate this readily. The camera may be more sensitive than the eye. Anyone who has developed some facility may make accurate diagnosis.

CANCEROGENIC SUBSTANCES

The most active cancer producing compounds yet encountered belong to the cholanthrene group; these are of special interest on account of their relationship to the bile acids. In[3] rats and mice treated with 3:4—benzpyrine and methylcholanthrene the development of intraperitoneal and subcutaneous tumors followed a fairly long preparatory, precancerous period. Different types of tumors are produced according to the tissue on which carcinogens act. Many tumors thus obtained are transmissable to other animals of the same strain for a limited number of generations.

The[2] production of skin tumors in mice with these same cancer producing hydrocarbons is always preceded by a precancerous state, papillomatosis.

When[2], as a consequence of the application of the cancer-producing chemical, the cell has reached a certain stage of constitutional alteration, canceration may proceed without the aid of further specific carcinogenic action. Non-specific irritation (scalding) has at this stage the same effect as the specific action by a cancer-producing compound. On the other hand such specific stimulation cannot be replaced, in the early stage, by non-specific stimulation (scalding). No increase in the rate of frequency of canceration is obtained by the simultaneous application of a specific and a non-specific stimulant.

A[2] comparison indicates that a 1.0 per cent solution benzpyrene is about equal in carcinogenic potency to a 0.5 per cent solution metylcholanthrene and that the 1.0 per cent solution methylcholanthrene induced tumors in a greater average time than similar doses of benzpyrine. For all doses the latent period was less variable for methylcholanthrene tumors than for similarly induced benzpyrene tumors. The 1.0 per cent solution of methylcholanthrene produced a sinificantly smaller proportion of tumors than a 0.5 per cent solution and an increased number of foci of the same concentratoin. This is due in part to the fact that the stronger solution is more toxic and that a majority of the animals injected with the larger doses died within ninety days. Animals, especially females, which were more than 10 per cent below the average body

weight for the group were more susceptible to the toxic effects of each dose of the chemical than those which were within 10 per cent of the mean or heavier. But both underweight males and females which survived to the later months of the experiment died with induced tumors. While the stronger solution produced fewer tumor rats, in hosts with the same number and size of foci, the induction time of the tumors was less in nodules of 1.0 per cent than in nodules of 0.5 per cent metylcholanthrene. Since even with the maximum dose of 12 mg. of methylcholanthrene divided in 6 foci, which was sufficiently toxic to cause death of a majority of the animals within 90 days, no microscopic or macroscopic tumors were observed in less than 60 days; it is probable that this is approximately the maximum latent period essential for the induction of the malignant process in the animals by this carcinogenic agent.

When[3] a filtrate of a Raus tumor is injected intracutaneously, subcutaneously, or intramuscularly into a new fowl, local tumors develop which have the same appearance whatever the site of injection. The cells from which the tumor develops are the blood and tissue macrophages fibroblasts of the undifferential type. The Raus sarcoma is therefore a malignant tumor of the reticulo-endothelial system. The transformation of a normal cell under these conditions occurs suddenly, there being no precancerous state.

INTRINSIC FACTOR

There appears to be an intrinsic factor for cancer susceptibility or resistance handed down in inheritance. This factor may not necessarily be genetic, but extra-chromosomal at times, as well.

Experiments[4] dealing with the etiology of breast cancer in mice have demonstrated that some maternal influence, which is not inherited, is transferred by the females of high breast cancer stock to their progeny. These findings were observed following reciprocal crosses between mice of inbred stocks of mice which differed markedly in their incidence of spontaneous mammary carcinoma. As this maternal "influence" may be transferred only by the female parent, there are three possible methods of transmission to the progeny. These are:

1. By means of the cytoplasm or cytoplasmic inheritance.
2. During the intra-uterine development.
3. By way of the mother's milk while nursing.

In[4] more recent work it has been determined that if the progeny of high breast tumor stock mothers are removed within twenty-four hours after birth and are given to low breast tumor stock females, these fostered mice and their descendants give rise to few breast tumors. Fostering after twenty-four hours was without effect. These studies probably demonstrate that the active maternal influence was present in the mother's milk and was transferred to the progeny while nursing. In tests where the young of low tumor stock females were given to high breast tumor stock mothers few tumors develop probably because such animals did not have the genetic breast cancer susceptibility.

Hybrid[4] crosses were made by reciprocal matings between individuals of high and low spontaneous breast tumor strains of inbred mice to determine the percentage of the first and second hybrids which would give rise to this type of neoplasia. Both virgin and breeding hybrid females were observed. Hybrid females which were maintained as virgins developed few breast tumors. First generation females which were nursed by females of the high tumor stock and later used as breeders, developed tumors. The incidence in all groups approached that characteristic of the high tumor stock (over 90 per cent). In second generation hybrids the incidence of breast tumors recorded was in agreement with the genetic theory that breast cancer susceptibility was inherited as a single dominant factor. This susceptibility could be transmitted by males as well as females of the high tumor stock. If the first and second generation hybrids nursed low tumor stock females —receiving the inactive milk influence—the incidence of breast tumors did not exceed 2 per cent. In other studies it was determined that the active maternal influence normally presented in the milk might be transferred by the inoculation of grafts or normal tissue of cancer strain animals. It was also found that a low tumor female fostered by a high tumor female is not susceptible and does not develop a breast tumor, but if it, in turn, is used to nurse susceptible mice, the susceptible mice will often develop tumor.

In[4] order to determine more about the role played by the susceptibility factor, a second

cross was made between high cancer and low cancer (fostered) mice of a single high tumor strain. The incidence of breast tumors in the respective lines was 95 per cent and 3 per cent. When fostered (low) high cancer strain females were mated to control high cancer stock males, less than 1 per cent of the first and second generation females, used as breeders, developed mammary tumors. If the reciprocal matings were made (high females x low or fostered males), there was no decrease in the incidence of breast tumors in first, second, and third generation breeding females. These results are indicative of the homozygosity of the original high tumor strain; they also show that the inherited breast cancer susceptibility or constitution was characteristic of all mice of this stock regardless of the incidence of breast tumors. Though the fostered mice transmitted the breast cancer susceptibility factor to their progeny, breast tumors did not result as these mice transferred only the inactive milk influence. If a representative of an inbred high breast tumor strain of mice failed to develop breast tumor, the incidence among its progeny and descendents was, in general, characteristic of the high tumor strain. When, however, a member of a low breast tumor stock gives rise to mammary cancer, no data have been obtained which would indicate that its progeny will be cancerous. They will give a low breast tumor incidence. These observations seem to demonstrate that there may be two types of spontaneous breast tumors in mice, one class being inherited, the second resulting from nongenetic influences.

Further[4] support has also been obtained for the theory that inherited breast cancer in mice may develop as the result of active stimulation produced by the following:

1. A maternal, non-genetic active milk influence present in the milk of high cancer stock mothers, which is transferred by nursing.

2. An inherited breast cancer susceptibility which, present data indicate, may be a single dominant factor.

3. The growth of the mammary gland tissue, resulting from the stimulation of the ovarian hormones, to a phase necessary for the cancerous change to take place.

As a result of very recent experiments, including the feeding of lyophilized tissue prepared from breast tumors, Bittner concludes that the active influence usually transferred in the milk of females of strains of mice having a high incidence of breast cancer may be a virus.

ENDOCRINE FACTOR

From[5] the point of view of human cancerology the conception of an endocrine imbalance as an etiological factor in cancer of the breast, and probably also of the uterus, should serve as a useful guide for clinical investigation. Both the breast and the cervix are accessible organs in which precancerous conditions may be readily recognized; therefore they seem quite suitable for such an investigation. The statistical work of Wooler and Wassink has established the existence of a group of women with an inherited susceptibility to cancer of the breast, and of yet another group with an inherited susceptibility to cancer of the uterus. It would therefore be desirable to search for clinical features resulting from slight endocrinological abnormalities which characterize women belonging to these two groups. If it were possible to recognize such a state of susceptibility clinically, before the disease had declared itself, the endocrinological abnormality on which such a susceptibility is based could be corrected and these two numerically important types of cancer might be prevented. There is now, however, a possibility of treating precancerous conditions of these organs by appropriate hormones.

CANCER PROPHYLAXIS

As a prophylaxis against cancer one should avoid prolonged and repeated sun exposures, for it has been proved that the sun has definite carcinogenic action. Men and women engaged in outdoor work, or having extreme sun exposure, have 46.5 per cent of the cancers in Texas.

It is now believed that alcohol and nicotine, when they are used to excess, are instrumental in the production of cancer of the buccal cavity, pharynx, larynx, lungs, esophagus, and stomach. Therefore, in order to prevent cancer in these organs, one apparently should be moderate in the use of alcohol and tobacco. Ochsner[6] and DeBakey have the definite conviction that the increase in the incidence of pulmonary cancer is due largely to the increase in smoking, particularly cigarette smoking, which is universally associated with inhalation. Every one of their

patients, with the exception of two women, was an excess smoker.

Control of "Industrial cancer" can be brought about by hygienic measures and improved working conditions, even though the worker is subjected to the influence of carcinogenic agents.

Recent advances in the diagnosis of cancer have been made through the perfection of the bronchoscope and the gastroscope. Bronchoscopy is an invaluable aid in establishing a diagonsis in early primary cancer of the esophagus and lung. Gastroscopy introduces anatomical and pathological exactness into the study of cancer of the stomach. Their wider application should produce a substantial decrease in mortality from cancer of the esophagus, lung, and stomach.

CANCER TREAMENT

The[7] only curative treatment of primary cancer of the lung is surgical extirpation. Only by total pneumonectomy can the primary focus as well as the regional lymph nodes be adequately removed. The average survival period, following operation in the collected cases which recovered, is 18.8 months. Irradiation therapy is of little, if any, value; there is some evidence that it may be actually detrimental.

The[8] recent advance in the surgical treatment of cancer of the esophagus offers much hope to patients with this tumor. It is interesting to note that resection of an esophageal cancer accompanied by gastro-esophagostomy carries no more risk than resection of the thoracic esphagus alone. Since approximately 45 per cent of the tumors are located in the lower one-third of the esophagus, re-establishment of the continuity of the digestive tract is possible in a large percentage of cases without additional risk.

Surgical methods for the relief of intractable pain in cancer by interruption of sensory pathways is accompanied by hazards, but the results have proved its justification. Grant[9] believes that the decision to attempt to relieve pain by blocking affarent pathways must rest on a number of factors: the position and rapid growth of the cancer, the amount and location of the pain, the patient's reaction to it, and the dosage of opium necessary for its control. Finally the patient's general condition as an operative risk requires careful consideration before radical surgical intervention is proposed. Roentgenograms of the chest should always be taken to determine the presence or absence of pulmonary metastasis. If the lungs are involved or if the sufferer's general physical condition suggests a life expectancy of less than three months, radical surgical intervention should not be attempted unless the pain is devastating. Under such conditions an attempt to block affarent pathways by the injection of alcohol into the subarachnoid space or further recourse to morphine is indicated.

RADIOTHERAPY

Voegtlin[19] states that the present roentgen ray and radium therapy is the result of a vast amount of more or less empiric clinical experimentation supplemented by data secured by animal experimentation. It is evident, however, that we are far from an adequate comprehension of the radio-therapeutic process. There is still no explanation for the apparent vast differences in radiosensitivity of the various normal and cancer cells. No concrete proof is available for the assumption that a given type of cancer cell is more radiosensitive than the normal cell of origin. Much further information is needed on the nature of the important recovery process from the effects of sublethal dosage. There can be little doubt that a better understanding of these complex problems would furnish a better rationale for cancer radiotherapy. A subject which deserves mention, however, concerns attempts to enhance the roentgen ray efficiency by adjunct therapy. But little has been accomplished along this line. Preliminary observations on experimental tumors suggest that the intratumoral injection of sterile water increases the effectiveness of roentgen rays. Similar claims have been made for the combination of heat and roentgen rays. I believe that perhaps the most daring and yet promising attempt would be to alter the metabolism by changes in diet, or by the administration of chemicals, in order to increase the radiosensitivity of the cancerous, relative to that of the normal, tissue. Experimental work of this kind with tumor-bearing animals is now under consideration at our institute.

The[10] well established fact that increase in the voltage of roentgen rays increases the penetrating power for tissues has led in recent years to the clinical use of roentgen rays of voltages from 400,000 to one million and slightly over.

Hope was entertained that these powerful rays might greatly improve cancer therapy. It appears now, however, that the results of supervoltage therapy have been more or less disappointing. The recent careful studies of Packard have shown that relatively little is gained as far as the ratio of depth to surface dose is concerned, by increasing the voltage from about 400 to 900 kilovolts. This is in agreement with the results obtained by Stone. In fact, Stone found the biologic effect the same, if the same dose is delivered to the patient from opposite sides, the one side receiving 200 kilovolt roentgen rays and the other 1,200 kilovolt rays. A few other investigators have made somewhat more favorable reports. Nevertheless, it appears at present that, while supervoltage roentgen rays may perhaps prove of value in the treatment of some deep-seated tumors, no great advance can reasonably be expected from this therapy.

A new tube which will generate between two and three million volts is now being constructed at the California Institute of Technology. The fourteen-foot porcelain tube is enclosed in a steel tank insulated by highly compressed air.

NEUTRON THERAPY

The[11] production of fast neutrons in therapeutic intensities and the successful callimation of them into beams, has made a new method of treatment of cancer available. It has not been used long enough to report definitely upon the results. The dose of neutrons to be used on patients was arrived at by a study of the comparative effects of x-rays and neutrons of biologic indicators. The number of neutron units that can be used is about one-quarter the number of roentgens of 200 kilovolt x-rays required for a given erythema. It has been found that doses of 180 to 200 units administered to fields 10 x 10 cm. in size to the side of the face and neck always produces a moderate erythema which appears between the seventh and eleventh days, deepening until about the twenty-first day. Epilation is always produced but it varies in the time of its appearance, the average being twenty-eight days. As far as it was possible to contrast these reactions with x-ray reactions, it may be said that there appeared to be more thin, dry flaking of the outer layers of the skin for the same intensity of erythema. The erythema appeared earlier than would be expected for similar x-ray erythemas. Only patients with advanced lesions however were treated. The criterion of acceptance for treatment was that the disease was so far advanced that the patients had no chance of being cured by surgery, x-ray, or radium. All had palpable lymph nodes believed to be invaded by cancer, as well as advanced primary lesions. In every case there was some decrease in the size of both the primary lesions and the metastasis. Of the twenty-four patients treated, eight have lived more than one year, but all still have their tumors. It must be emphasized that the treatment given were single erythema doses. They were not even skin tolerance doses and were not fractionated. The same general reactions followed the treatments with neutrons as followed those with x-rays; most of the patients presented one or more of the following symptoms: weakness, anorexia, nausea, and vomiting. A new cyclotron has been completed to be used largely for clinical purposes. It is too soon to speak of results, but the immediate responses so far are greater than before, and the general reactions of the patients are less marked. The total doses have been greater and have resulted in some cases in a second degree epidermitis.

HYPOTHERMIA

Recent[12] reports on local and general hypothermia as a treatment for cancer bring out some very important and interesting facts. The procedure is one comparable in many respects to other major therapeutic methods and is not entirely devoid of risk. It is a method which should be attempted only by individuals or groups fully equipped and having a trained personnel with all available opportunity for careful observation of the patient during the treatment. Physiologic and biochemical phenomena observed during general hypothermia show a small degree of deviation from the normal; however a restoration to normal levels follows the return to the normal body temperature. One of the most constant and gratifying results of generalized refrigeration is the relief of pain enjoyed by the patient after return to normal body temperature. All patients complaining of pain were relieved, in part or completely, following hypothermia. Where metastatic involvement had required large doses of narcotics, withdrawal of all sedation has been possible and spontaneous relief of pain has occurred for pe-

riods of two days up to five months. Regression in the size of the tumor was accompanied by degeneration of the tumor cells to the point of actual necrosis; even disappearance of the tumor has occurred. Local refrigeration is an extremely valuable adjunct to the present method of treating cancer, particularly with cases which are inoperable. Such treatment can be combined with irradiation. The initial enthusiasm for this type of treatment, however, has decreased to some extent.

ADJUNCT TREATMENT

The[13] use of zinc peroxide paste in accessible ulcerating cancer is followed by satisfactory results. The odor disappears, drainage lessens, cultures show a marked decrease in bacteria, the necrotic tissue is gently removed, and the granulating base. The method of application of zinc peroxide is as follows: The wound is cleansed with peroxide and saline sprays, free necrotis tissue is gently removed, and the wound is again sprayed. A sterile preparation of zinc peroxide is mixed with an equivalent amount of sterile distilled water and mixed thoroughly with an asepto syringe. More water is added until the paste has a consistency of about 40 per cent cream, and this is applied by the syringe to the entire lesion. Only one or two dressings are required daily. The sedative can also be appreciably reduced, and the patient is free from embarrassment of the odor.

A solution of azochloramid in triacetin applied on gauze dressings over foul smelling cancer areas will likewise result in a clean and comfortable area, free from disagreeable odor. Occasionally skin irritation will follow its application; in such cases one should alternate with a dressing moistened with boric acid solution or with vaseline soaked gauze.

Dilaudid hydrochloride has certain advantages over morphine sulphate for the control of pain in cancer patients. It is a stronger analgesic requiring but a small dose—about 1/5 that of morphine; it acts more quickly following its administration by mouth or injection; the effects are more prolonged, the appetite is usually retained, and constipation is less frequent. The usual pain relieving dose is not so likely to cause drowsiness; so the patient remains more alert mentally.

METASTASIS

The[14] incidence of distant metastasis from cancer of the upper respiratory and alimentary tracts has been determined in 284 patients who died from cancer in these areas. Sixty-three patients, or 23.3 per cent, were found to have blood-borne dissemination. The most common site for distant metastasis are lungs, liver, and pleura in the order named.

A[15] very recent report of a study of primary cancer of the breast shows that the most common location of metastasis from primary cancer of the breast is in the lungs, liver, adrenal glands, spleen, and the ovaries. There is no apparent difference in the survival of patients given post-operative radiation treatment and of those to whom no such therapy was administered.

Observation[16] of the development of inoculated tumors in animals teaches us that the organism does not maintain a passive attitude, but that on the contrary the development of the tumor encounters active obstacles, so that its growth may stop at times; the tumor may even be absorbed and in such cases the animal will gain immunity against further inoculations.

A[16] certain resistance of the human organism against malignant tumors may be concluded from the fact that cancer chiefly metastasizes by way of the lymphatics and only rarely and in late stages by way of the blood stream. As Schmidt has shown, this phenomenon is due to the fact that cancer cells which have entered the blood stream cannot develop there and are destroyed. On the basis of these considerations, the author tried to find a method by which the specific resistance of the human organism to cancer could be strengthened.

CANCER IMMUNITY

Besredka has shown that cutaneous inoculation of rabbits with a certain tumor led first to development of this tumor, but later to its resorption and to development of an immunity to the tumor, independent of the place of later inoculations. The tumor under discussion grew regularly when inoculated into the stomach of rabbits, but after cutaneous implantation had led to immunity, no inoculation tumor could be obtained in the stomach. When the tumor was inoculated simultaneously into skin and testicles, the cutaneous tumor first grew and then was absorbed, while the testicular tumor did not take and the animal remained healthy and was immunized against the tumor.

The author[16] suggests in case of a tumor which either can not be extirpated completely or which has produced metastasis, removal of part of the tumor and intracutaneous implantation of the tumor tissue; in order to avoid the possibility of secondary infection, the part of the tumor with the most exuberant growth should be used. Pearce and Brown in their experiments crushed the tumor in a mortar and added isotonic saline solution in order to get an emulsion of tumor cells; the author thinks that Ringer's or Locke's solution would be preferable. The author is of the opinion that no harm can possibly be done by producing another focus at a place where the conditions for development of the tumor are most unfavorable and those for development of specific immunity most favorable, in cases in which propagation by way of the lymph stream or metastasis has taken place before. Besredka has proved that a tumor which develops in the skin, and is then resorbed produces full immunity against inoculations even in those organs in which otherwise experimental inoculations take readily. The immunity is not accompanied by formation of antibodies in the body fluids and it cannot be transmitted to another animal by inoculation of the cells from the first animal. The immunity is of cellular character and extends to all cells of the organism.

Tumor[16] cells which are implanted into the skin may either be resorbed without having led to formation of a new tumor or a tumor may develop and may then be absorbed. In the former case, a certain degree of immunity may be expected to develop, while in the latter case complete immunity of the entire organism may be expected from the experimental results. A third possible course would be that a tumor develops in the skin but does not show any tendency to regression so that the inoculation would constitute the point of origin of a new tumor in the organism. This new tumor would devolop in full view, however, and could readily be treated by extirpation or irradiation if necessary.

Two[16] intracutaneous inoculations with tissue from gastric cancer have been carried out; in one of them the cancer tissue was implanted into a cutaneous pouch and in the other an emulsion was prepared and was injected intracutaneously. No tumor developed in either case; thus the tumor cells must have been reabsorbed and development of cellular immunity may be expected.

The author's[16] suggestion aims at immunization of the organism against infection at a time when the infection is still in the process of development. The most prominent example of immunization of this type is Pasteur's rabies vaccination which immunizes the organism during the period of slow development of the infection. Yet the virus of rabies develops more rapidly than the malignant tumors do. The author hopes that Pasteur's method will prove effective in the cancer treatment as it did in the case of the virus of rabies.

CONCLUSIONS

Cancer is still the great challenge to the medical profession. Perhaps in the greatness of this challenge lies something of the fascination that its problems hold. And for those who may at times feel doubt and discouragement, let me add—during this past half century, if I have seen nothing more, I have seen this great perplexity steadily shrink from year to year. Today the mystery is not so large as it was ten years ago; and ten years ago it was not as monstrous as it was during the previous decade. And in the same manner can we look forward to the future and know full well that in the future lies the answer that we seek.

Professional Building.

BIBLIOGRAPHY

1. Meyers, Robert: Histological Diagnosis of Early Cervical Carcinoma: Surg. Gynec. & Obstet. (Aug.) 1941.

2. Ligeris, M. J. A.: Precancer and Carcinogenises: Am. J. Cancer 40:1, 1940.

3. Deming, W. F.; Curtis, M. R.: Eisen, M. J.: Carcinogenic Activity of Methylcholanthrine in Rats. Am. J. Cancer: 40: 85-127, 1940.

4. Bittner, John J.: Breast Cancer in Mice as Influenced by Nursing: The Bulletin of the Minnesota Medical Foundation. Page 94. (June) 1940.

5. The identity of the author and title of the article from which most of the subject matter of this paragraph was obtained has been lost; the material is too valuable to omit.

6. Ochsner, A., and DeBakey, M.: Carcinoma of the Lung: Arch. Surg.: 42: 209: 1941.

7. Ochsner, A., and DeBakey, M.: Surgical consideration of Primary Carcinoma of the Lung. Review of the Literature and Report of 19 cases: Am. J. of Surg. 8. 992: 1940.

8. Adams, W. E.: Carcinoma of the Esophagus: Surg. Gynec. & Obstet. 72: 2.A: 15, 1941.

9. Grant, Frances C.: Surgical Methods for Relief of Pain: J. of A. M. A. 116: 7 (Feb. 15) 1941.

10. Voegtlein, Carl.: Possibilities of Improved Therapy for Cancer Patients: J. A. M. A. 116: 1941-1497, April 5, 1941.

11. Stone, Robert S.; Lawrence, John H.; Abersoid, Paul C.: A Preliminary Report on the Use of Fast Neutrons in the Treatment of Malignant Disease: Radiology 35: 322 (Sept.) 1940.

12. Smith, Lawrence W.; Fay, Temple: Observations on Human Beings with Cancer, Maintained at Reduced Temperatures of 75°-90° Fahrenheit: Am. J. of Clinical Pathology, 10: 1 January, 1940.

13. Freeman, Bromley S.: The Use of Zinc Peroxide in Malignant Lesions. J. of A. M. A. 115: 181 (July 20) 1940.

14. Braund, Ralph R.: Martin, Hayes E.: Distant Metastasis in Cancer of the Upper Respiratory and Alimentary Tracts: Surg. Gynec. & Obstet. (July) 1941.

15. Saphir and Parker: Metastasis of Preliminary Carcinoma of the Breast: Arch. of Surg.: Vol. 42. 226: 1941.

16. Jarotzky, A. I.: Treatment of Inoperable Cancer: Schweizerische medizinische Wochenschrift. 71:181 (February 22) 1941.

NOTE: A multitude of articles was reviewed for the preparation of this paper. As a result certain material may be incorporated in this paper for which credit is not given.

Management of Chronic Arthritis

RICHARD M. SMITH, M. D.
Dallas, Texas

IF we pass over chronic gonorrheal arthritis, Still's disease, tuberculosis of the joints, and Charcot's disease, we still have two large groups —atrophic and hypertrophic arthritis. Some authorities think there are identical diseases at different stages, but Collins and other pathologists have proved to their satisfaction that the two diseases start in different parts of the joint tissue, and progress in different ways. Atrophic arthritis usually occurs in younger people; they are acutely ill and show evidences of cartilage destruction, fusiform joints, muscle atrophy, with slick, shiny skin and marked deformity. Older people are usually afflicted with hypertrophic arthritis; they are not acutely ill, show no muscle atrophy or skin change, have very little if any deformity; but in this condition there is an overproduction of bone "spur" formation, and Heberden's nodes are present.

LABORATORY AIDS

As regards the laboratory findings: in atrophic arthritis the sedimentation test is classical, it quickly drops very low but this is overcome as the patient progresses. By the Westergreen method 15 mm. in 45 minutes is the upper limit of normal, but some cases go as low as 200 mm. There is usually an anemia with low hemoglobin but normal red blood count. In the hypertrophic cases, however, these findings do not exist. Serum phosphate is normal in both types. If, however, a high value is found we are suspicious of an existing bone disease such as cancer or osteitis deformans. Only Roseman continues to rely on skin tests. Hicks and Wyatt are the only two authorities who place any reliance on the drop in the leukopenic index following the intravenous injection of streptococci foreign protein. The liver function test is generally low in the presence of atrophic arthritis and normal in hypertrophic cases. Most authorities agree that this can be ascribed to but is not the cause of the disease. The basal metabolic rate is normal in both types unless the patient has thyroid disease associated with the arthritis.

The x-ray finding is the last court of appeals, and along with the clinical picture and history will classify most cases by showing the classical loss of joint space and cartilage destruction in atrophic arthritis, and over-production of bone with its spurs, beaks and spicules typical of hypertrophic arthritis.

ETIOLOGY

The etiology of these chronic forms of arthritis is unknown. The Germans advance the theory that there is a neurogenic factor in the atrophic cases; foci of infection cause a disturbance in the automatic ganglion and anterior horn cells, which produces a condition comparable to chronic anterior poliomyelitis, and this in their opinion is atrophic arthritis. Then there is a group of men who think that hypertrophic arthritis is entirely metabolic in origin, and say it arises from change of age, weight and trauma probably brings us closer to the causation than the former hypothesis about atrophic arthritis. To date, however, we have to admit we do not know.

TREATMENT

As regards psychology in these cases, the members of our profession are divided into three classes. First there is the pessimist who considers all treatment useless; has the patient's teeth and tonsils removed; gives salicylates intravenously; and then says "What's the use" and sends the patient off to undertake hot baths and a series of massages. Next comes the optimist who takes the viewpoint that everything is going to be satisfactory; he is successful for a while; is a good psycho-therapist, but a "fadist" who tries everything that comes on the market and thinks he has found the "cure". Then there is the realist, who knows the inadequacy of today's treatment; treats the patient as one

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with a chronic disease; tries to help him overcome the disease even as one overcomes tuberculosis, and succeeds in relieving his pain.

Usually, patients so afflicted have gone all over the country and spent most of their money. It is therefore advisable to create a new foundation and tell the patient that there is no specific help for arthritis; that he may look for aid in one to two years; that you hope to relieve his pain and halt the progress of deformity, knowing that these things have been done for others, and can be done for him. Unlimited psychotherapy is needed in the care of these patients. Beginning as we do, the patient at once thinks you are honest, and he is easy to carry along on treatment. The successful building up of emotional stability and a stisfactory philosophy of life is most essential to the welfare of the patient. The time you have set for improvement keeps him from moving on, and the undying patience of the physician is in time instilled into the patient.

Foci of Infection. Remove all foci of infection, not for the cure but for the health of the patient. Foci of infection do not cause atrophic or hypertrophic arthritis. Then there is the question of when to remove foci of infection; some say wait and some say do it promptly, but most authorities favor the latter as it lessens the tendency to subsequent flare-up.

Vaccines, Antigens and Filtrates. Crowe of Leeds, England, still contends that the vaccine helps his patients. We use it at regular intervals in our treatment, for psychotherapy in a few of our cases. Aid is uncertain unless the patient gets a fever reaction with the injections; when he does, however, he is better only for a time. Always bear in mind that the fever reaction is undesirable. Autohemotherapy is of no value except in Still's disease, when used with artificial fever therapy.

Chaulmoogra Oil. Stanley reported 100 per cent cure on 1-5 cc. a week, intramuscularly. All patients have a reaction with fever and malaise. To sell the commercial oil the manufacturers changed the title of his reprints and flooded the country with them. He has not rewritten his findings. Bee venom is another treatment. McKenna, who is enthusiastic about its use in fibrositis, says it is no good for atrophic arthritis.

Diet. A general diet is best. Cutting out fruits and tomatoes robs the patient of much needed vitamin. The raw vegetable diet is said to relieve pain, not as a result of the high vitamin intake, but according to Pillman and Williams its due to the change of salt balance; it gives low sodium and high potassium content in the body tissues. According to Pemberton, the low carbohydrate diet has "taken the count." The low protein diet is no longer used.

Vitamin therapy is still in the experimental stage. The authorities all recommend the use of adequate amounts of A, B, C, D and G. The atrophic cases are low in vitamin C and can utilize huge doses of it. Two hundred milligrams will not show up in the urine, but huge doses do not cure the disease. Farley still finds his patients are more comfortable on *vitamin D therapy* of from 50,000 to 700,000 units a day, but he is alone in his enthusiasm. No one else has ever considered it of value in the hypertrophic cases. If the patient is more comfortable on it, we use it. There is room for further study of its use in atrophic arthritis. The results from vitamin G are unknown.

Drugs. Salicylates by mouth are still most satisfactory for relief of pain. Aspirin, grains X with ½ dram of soda every 4 hours, is one of the best medication routines. The giving of these drugs may mask the patient's symptoms. Benzedrine sulfate—10 mgs. twice a day—will often relieve fatigue. Bile salts should be given in the atrophic cases with liver damage. Amidopyrine in any form is dangerous. Cincophen is dangerous particularly in the atrophic case that already has a damaged liver. Ortho-iodin-benzoic acid administered orally will relieve pain in some cases, and can be alternated with the salicylates. Thyroid should be given to all patients with a low metabolic rate, and an estrogenic hormone to those who need it for their general well-being. The same is true of the male sex hormone.

Other Remedies. Causilin, an amidopyrine product, is unsatisfactory. *Aciform II:* Formic acid, alcohol, iodine, sulphur, terpen mixture for hypodermic injection is no good. *Sulphur:* Those still trying this should read the published work of Freyburg, Black and Fromer. It was thought that their original cases were benefited because the sedimentation test showed improve-

ment. We have never used sulphur. *Gold* is being much talked of in the early atrophic cases. It has been used extensively in England, with good results in the very early cases. In America the results have not been so good. The dosage is 150 to 200 mgs. weekly up to 1-2 grams, and rest for three months. This is a toxic drug, and several patients have died from its use. It should be given further trial in a large clinic with facilities for excellent controls. We have not used it in our practice yet. The sulfonamide products are no good in atrophic or hypertrophic arthritis.

Physiotherapy. Rest is the best treatment, but this does not mean fixation of the joints. Heat: Diathermy is the preferable local heat treatment; infra-red is only skin deep. Cradle heat at home is fine. Contrast baths constitute an excellent form of home treatment, but should be changed from 1 minute hot and 1 minute cold to 6 minutes hot at 113°F or 45°C and 2 minutes cold 45°F or 7.2°C for a 30 minute period, beginning and ending with hot water. Rubbing above and below the joint is good, but the joint itself should not be rubbed. Professional physiotherapy three times a week. To stay at one of the watering places twice a year is always helpful. Occupational therapy is always excellent in that it not only helps the joints but the morale of the patient. Deep therapy with the soft gamma rays is of doubtful value in atrophic arthritis. We believe with others that it lessens the pain in hypertrophic cases and are using it in picked cases. There is no enthusiasm over fever therapy. Any surgical procedure in these cases should be left to the orthopedist. For your information, the Smith Petersen vitalumin cup for relief of fixation of the hip in the chronic atrophic cases should be mentioned.

CONCLUSION

In conclusion, let us make up our minds that in chronic arthritis cases we are going to treat the patient, not the disease; that the hypertrophic arthritis patient will not get deformity, and you can teach him how to live with his disease under control; and that some atrophic arthritis cases will be arrested.

4105 Live Oak St.

Cutaneous Complications in the Treatment of Syphilis

HIRAM D. NEWTON, M. D.
San Diego, California

THE modern treatment for syphilis consists of the use of a number of drugs, methods, and physical agents. The indications for the use of these, and the methods and intricacies of administration entail a complete course of instruction and do not enter into this paper. However, two things are of such extreme importance that I feel obliged to list them.

First—All cases of syphilis which are not acute, should have treatment started with a preparatory course of bismuth; and never with an arsenical.

Second—Never terminate treatment or enter into a rest phase with an arsenical—always with a course of bismuth.

The reason for these statements are easily found in syphilologic literature. Any person presuming to treat syphilis should know why these statements are true.

Iodides are given by mouth and vein. Mercury is given by mouth, by intramuscular injection and by inunction. Arsenic is given principally intravenously, but in some forms may be given by muscle. Bismuth is administered intramuscularly with the sole exception of sobisminol mass, which seems to be effective by mouth.

The non-specific procedures, such as various types of hyperpyrexia, malaria inoculation, and foreign protein are less concerned in this paper than is chemotherapy. Malaria and burns may occur as complications of hyperpyrexia. Quinine given to terminate malarial paroxysms may produce cutaneous complications which are sufficiently well known to obviate the necessity for discussing them.

ARSENICAL COMPLICATIONS

Arsenical medication presents a great variety of cutaneous complications. Extravasation may occur during intravenous administration of a drug. If a large amount of the drug has been spilled in the tissue it is advisable to dilute it by prompt injection of sterile normal saline

Presented before the New Mexico Medical Society at its fifty-ninth annual session, Raton, New Mexico, May 26-28, 1941.

solution. Massage and warm wet packs following this may prevent a subsequent slough with a slowly healing wound. The specific effect of sodium thiosulfate solution injected into the tissues is questioned. Normal saline solution is considered the preferred agent for dilution of extravasated irritant substances. Extravasation of a trivalent arsenical seems to have a sensitizing effect on the skin. This has been observed clinically on repeated occasions. Sulzberger[1] and Cormia[2] have done some very interesting research on the sensitization of guinea pigs to arsphenamine. The weight of this evidence should cause caution in the administration of arsenicals after a possibly sensitizing extravasation.

In the administration of arsphenamine and its derivatives there occasionally occurs a confusing dermatitis described by Milian as "Erythema of the Ninth Day." This consists of a morbilliform, scarlatiniform, or urticarial eruption associated with fever and occurring from the seventh to the twelfth day after the first administration of the drug. The importance of recognizing this type of reaction lies in judging the advisability of future arsenical medication. A true ninth day erythema recovers promptly and is no contraindication to continuation of the same treatment. On the other hand a beginning exfoliative dermititis may terminate fatally if treatment with the arsphenamine is continued.

The much dreaded exfoliative dermatitis usually starts later in the course of treatment. An extravasation immediately under the skin may sensitize the individual so that some subsequent administration or arsphenamine will precipitate a violent exfoliative dermatitis. Usually there are prodromal warning signals which should put the physician on his guard. Prior to the administration of an arsenical the patient should be asked if he feels well, if his skin has itched or broken out during the previous week, and if he tolerated the previous injection well. Acute infections, exacerbation of a seborrhoeic dermatitis, a gastro-intestinal upset, evidence of erythema in the cubital areas, eczemas, jaundice or puffiness of the eyelids are all contraindications to continuing arsenical treatment. The differentiation between ninth day erythema is made on (1) time realtionship to first injection of an arsphenamine; (2) the morbilliform or scarlatiniform character of the ninth-day erythema contrasted with the exudative and exfoliative character of the more serious complication; (3) the mild course of the ninth-day erythema contrasted with the implacably progressive character of true exfoliative dermatitis.

The treatment of ninth-day erythema is expectant. Alkalies by mouth, and bed rest will usually result in rapid disappearance of the eruption. On the other hand, the management of arsenical exfoliative dermatitis is a most trying and prolonged procedure, often lasting for several months. It is impossible in a paper of this type to outline the proper treatment of this condition. Stokes[3] in his encyclopedic text gives tabulated details of the accepted procedures and reference should be made to this work for a more detailed study of this problem.

One of the most alarming, but fortunately most rare of the cutaneous complications of arsenical medication is that of haemorrhage. It should be constantly looked for. Evidence will be seen in purpuric spots, petechiae, or bleeding gums. This demands immediate cessation of all treatment and careful study of the patient for evidence of liver damage or injury to blood forming organs. Only after adequate study of liver function, blood picture and platelet count should treatment be resumed.

The well-known Herxheimer reaction may involve any tissue or organ but is more frequently seen and recognized in the skin. It follows the initiation of anti-syphilitic treatment and consists of an exacerbation of any syphilitic lesion which is present at the time. It is startling to see a florid secondary syphilid develop over night following the first injection of an arsphenamine, or of mapharsen. The cutaneous Herxheimer reaction is unimportant. In late syphilis it is very important to bear in mind the possibility of a Herxheimer reaction affecting the meninges, the vascular system or some other vital organ, with serious or fatal results.

Herpes zoster is one of the complications occurring in the treatment of syphilis. It is of sufficient importance to consider at some length. Herpes zoster under anti-syphilitic treatment is usually of a severe and painful type. It usually occurs during arsphenamine or neo-arsphenamine administration. Bancroft[4] has reported its occurrence with bismuth in two cases. Whether this phenomenon is due to biotropism, as claimed by Milian, or is due to other causes is an interesting academic question. It should be treated as any other herpes zoster by X-Ray, surgical

pituitrin, or diphtheria antitoxin and local soothing procedures. It is no contraindication to continuation of treatment for syphilis.

So-called fixed eruptions occur more commonly than is recognized in anti-syphilitic therapy. They occur in administration of arsphenamine, neo-arsphenamine, and more commonly with mapharsen. Such an eruption consists of one or several well-defined, usually pruritic, eczematous or urticarial areas which flare up on administration of the drug, and gradually disappear when the drug is withdrawn. I have always considered the appearance of such a lesion during the administration of arsenic as a danger signal and have felt obliged to change to another drug. Sometimes the change to a different brand of arsenical is helpful. Fixed eruptions during mapharsen administration are more frequent[5, 6] and are of less dangerous significance. Often a course may be interposed and no trouble result on later renewal of the arsenical. Tryparsamide can, but rarely does produce exfoliative dermatitis. Fixed eruption from Tryparsamide is not infrequently seen[6].

REACTIONS WITH OTHER METALS

Bismuth can produce fixed eruptions or an urticarial type[7] and of a plaque-like slate-colored and asymptomatic type. If there is no renal irritation and the subjective symptoms are not troublesome, the course of bismuth may be finished.

Oil suspensions or solutions of bismuth in intramuscularly. Subcutaneous injection or leakage results in painful nodules. Intravascular injection may result in pulmonary embolism or in a local embolic gangrene due to the oily mass and not to the drug. Prevention of this complication is by an attempt to aspirate prior to each injection. Treatment is symptomatic. The more common epithelial evidence of bismuth discoloration of the mucous membrane of the mouth. This may be due to over-saturation with bismuth, or to faulty dental hygiene. It is important to decide which is the causative factor, as the future conduct of treatment will depend on this knowledge. Also dental focal infection is considered an important contributing factor in the explosive exfoliative dermatitis of the arsphenamines.

Jaundice is an important cutaneous sign in the treatment of syphilis. It may be due to syphilis. In this case very careful and specialized treatment is indicated. It may be due to arsenic. If so—it may indicate hepatic damage and be the warning signal of severe systematic complications. There is some evidence[8] that bismuth may produce jaundice.

Mercury is still valuable in the treatment of syphilis. It is given in aqueous solution intramuscularly, also by inunction and by mouth. Mercury salivation is sufficiently well known to need no discussion. The still very useful method of inunction may produce salivation and frequently does produce a local folliculitis or specific mercurial dermatitis. The treatment of these conditions is obvious.

Iodides may produce a granulomatous or a pustular dermatitis. The dermatologist will usually recognize a granulomatous iododerma. The granulomatous bromoderma is the lesion which most closely simulates it. The treatment is cessation of administration of iodides and the heavy administration of sodium chloride by mouth and vein. Pustular iododerma can often be stopped by rapid increase in the dosage of iodides. Increasing from fifteen grains three times a day, to forty or even sixty grains three times a day may stop the appearance of the scattered pimple-like lesions which we feel are due to the iodine.

SUMMARY

All drugs used in the treatment of syphilis are quite prone to produce cutaneous complications. The patient should be warned of this probability and asked to cooperate by reporting all symptoms to the physician. Some of these cutaneous complications are serious or even fatal. Most of the serious cutaneous complications give warning signals which may be discovered by a properly warned patient and a careful, not too-hurried physician.

1203 Bank of America Bldg.

REFERENCES

1. Sulzberger, M., Hypersensitiveness to Arsphenamine in Guinea Pigs, I Experiments in Prevention and in Desensitization. Arch. Dermat. & Syph., 20:669, Nov., 1929.

2. Cormia, F. E., Experimental Arsphenamine Dermatitis. Canad. M. A. J., 34:272, March, 1936.

3. Stokes, J. H., Modern Clinical Syphilology 2nd ed., Philadelphia, W. B. Saunders Co., 1934.

4. Bancroft, Irving, Herpes Zoster Occurring During Treatment for Syphilis. Arch. Dermat. & Syph., 41:929, May, 1940.

5. Mendelsohn, H. V., Fixed Eruption With an Extracutaneous Manifestation Due to Mapharsen, Arch. Dermat. & Syph., 41:509, March, 1940.

6. Abramowitz, E. W., & Noun, M. H., Fixed Eruptions, Arch. Dermat. & Syph., 35:875, May 1937.

7. Sweitzer, S. E., Fixed Eruption Due to Bismuth, Arch. Dermat. & Syph., 30:306, Aug., 1934.

8. Nomiard, R., et al., Jaundice From Bismuth Compounds Used in Therapy of Syphilis, J. A. M. A., 111.19, July 2, 1938.

Effect of Electromagnetic Radiations on Flocculation Tests for Syphilis

EDWARD L. BREAZEALE, M. S.
Tucson, Arizona

IV THE EFFECT OF ULTRAVIOLET RAY AND DIATHERMY WAVES ON ADSORBED SYPHILITIC SERA

THIS is the fourth of a series of papers dealing with the effects of electromagnetic radiations on various tests for syphilis. In earlier publications the effect of ultraviolet rays[1] and diathermy short waves[2] was discussed. In these earlier experiments whole human and animal sera were used. In the experiments discussed in this paper the human and animal sera were adsorbed with Kahn and Hinton antigen prior to exposure to the supersonic waves.

EXPERIMENTAL

All sera, both human and animal, were heated for thirty minutes in an electrically controlled water bath at 56°C. They were then removed, cooled and the Kline diagnostic, Mazzini and Leiboff tests performed on each specimen. The results obtained constituted the control reaction. Striet care was observed in following the author-serologists directions in carrying out the various tests. Two one-half m.l. portions of each sera were measured into test tubes. 0.5 m.l. of Hinton indicator was added to one tube and 0.15 m.l. of Kahn standard antigen was added to the other, then the tubes were shaken for four minutes in a shaking machine. The tubes containing the Hinton indicator were then incubated at 56°C for ten minutes and centrifuged at 3800 r.p.m. for 15 minutes. The tubes containing the Kahn antigen were centrifuged at 3800 r.p.m. immediately following the shaking period. The supernatent fluid was then carefully removed by the use of an aspirating syringe. The three tests were performed on the supernatent fluid. The results obtained constituted the adsorbed reaction.

The adsorbed sera were then measured onto standard Kline slides, antigen added and the slides rotated under an ultraviolet ray light in the same manner as described in the first of in using the diathermy short wave as was dethese papers[1]. A similar procedure was followed scribed in the second of the series[2].

RESULTS

The results obtained by adsorption with Hinton antigen were the same as those obtained using Kahn antigen. In every case the exposure of the mixtures of the adsorbed sera and antigen to ultraviolet rays or diathermy short waves failed to produce any reaction that simulated a positive test. In all three tests the results obtained agreed in every case.

Table I

The Effect of Ultraviolet Rays and Diathermy Short Waxes on Sera Adsorbed With Kahn and Hinton Antigen Human Sera

Original Reaction	Neg.	1 plus	2 plus	3 plus	4 plus	Total
Number of Control Sera	30	35	134	196	102	500
Reaction following adsorption	30 neg.	35 neg.	134 neg.	196 neg.	102 neg.	500 neg.
Reaction of adsorbed sera following violet ray irradiation 5 min.	30 neg.	35 neg.	134 neg.	196 neg.	102 neg.	500 neg.
Reaction of adsorbed sera following exposure to diathermy short waves 25 min.	30 neg.	35 neg.	134 neg.	196 neg.	102 neg.	500 neg.

In order to ascertain that the change in titre was not due to a dilution effect of the adsorbing antigen a series of sero-positive and sero-negative sera were adsorbed with normal saline and examined in the same manner as deseribed above. In no case did the titre decrease, but actually behaved the same as untreated serum. This is shown in Table II.

Table II

The Effect of Violet Ray and Diathermy on Sera Adsorbed With Normal Saline

No.	Control Reaction	Adsorbed Reaction	Reaction of adsorbed sera upon exposure to: Violet Ray 4 Min.	Diathermy 5 Min.	Diathermy 25 Min.
1	2+	2+	3+	1+	2+
2	2+	2+	3+	1+	2+
3	3+	3+	3+	2+	3+
4	2+	2+	3+	1+	2+
5	3+	3+	3+	1+	3+
6	neg.	neg.	1+	neg.	‡
7	neg.	neg.	1+	neg.	‡

A series of animal sera was examined following the same procedure as outlined above. The results are given in Table III.

Table III

The Effect of Violet Ray and Diathermy Short Waves on Animal Sera Adsorbed With Kahn and Hinton Antigen

Sera	Number Examined	Control Reaction	Adsorbed Reaction	Reaction of adsorbed sera upon exposure to: Violet Ray 5 Min.	Diathermy 25 Min.
Horse	175	all 4+	all neg.	all neg.	all neg.
Goat	30	all 4+	all neg.	all neg.	all neg.
Cow	120	all 4+	all neg.	all neg.	all neg.
Turkey	75	all 4+	all neg.	all neg.	all neg.

Total number examined—400.

DISCUSSION

According to the accepted theories of the mechanism of the various flocculation tests for syphilis, the antigen acts as a lyophilic colloid which is converted to a lyophobic colloid in the presence of reagin, or antibody for syphilis. If this simple statement of the mechanism is adsorbed with an antigen and examined, the resulting sera should give a negative reaction. Likewise if a negative sera is adsorbed, a negative serologic result would be expected. However, in previous papers[1, 2], it has been shown that negative sera may be made to react with the antigen and give positive serological tests when the reaction between sera and antigen takes place in the presence of supersonic waves. It has been brought out in these experiments that sero-positive and sero-negative sera may be adsorbed with the antigens of Kahn and Hinton, and sero-negative sera be obtained. Likewise, when these sero-negative sera are exposed to the supersonic waves, positive reactions to the various tests used in these experiments are not obtained. This phenomonon was found to be equally true of human and animal sera.

Porro[3] and Greene and his associates[4] have shown that animals give positive serological tests for syphilis. However, they have offered no explanation for their observations. An examination of Table III will show that while the animal sera tested gave four plus reactions on the control, that they all behaved the same as human sera on the adsorbed reaction. This would seem to indicate that the Kahn and Hinton antigens were reacting with the active substance in the animal sera in the same manner as they react with the human sera. Therefore, it would seem that the same substance reacts in human and animal sera, or, at least, a very closely related substance.

Table I shows that if a positive and negative sera are adsorbed, centrifuged and the supernatent sera examined by the various flocculation tests, negative results even in the presence of supersonic waves are obtained. This would indicate that either the sero-active portion of our sera has been removed, or that the titre has been decreased by dilution. However, when normal saline is used in place of antigen there is no change in titre. In fact, the sera acts in the same manner as does normal undiluted sera. Therefore, it would appear that we must have adsorbed the sera-active substance out of the sera by antigens. Since, as has previously been shown, negative sera in the presence of antigen and supersonic waves will give sero-positive reactions, we must have in the negative serum some substance that is reacting with the antigens, but does not produce a lyophobic colloid unless exposed to the supersonic waves.

The results of these adsorption experiments clearly indicate that the sero-active substance must exist in one form in the negative sera and in another form in the positive sera. In the negative sera the combination of antigen and a sero-active substance will produce a lyophilic compound, while in the positive sera the combination will produce a lyophilic colloid and the formation of floccules is observed.

CONCLUSIONS

1. That sero-active substance is removed in sero-negative as well as sero-positive sera by adsorption with Kahn and Hinton antigens.

2. That if normal saline is used in place of antigen no change in the action of supersonic waves is observed.

3. That adsorbed sera are not made positive in the presence of antigens by exposure to supersonic waves.

4. That animal sera behaved in the same manner as human sera.

5. That the sero-active substance must exist in one form in negative sera and in another form in positive sera.

Breazeale Research Laboratory.

REFERENCES

1. Breazeale, E. L., The Effects of Electromagnetic Radiations on Flocculation Tests for Syphilis, I The Effect of Violet-rays, Sw. Med. 25:321, Oct. 1941.

2. Ibid., II The Effect of Diathermy Short Waves, Sw. Med. 25:321, Oct. 1941.

3. Porro, T. S., The Kahn Reaction with Serum of Different Animals, Jour. Inc. Dis., 53:210, 1933.

4. Greene, R. A., Harding, H. B., Hudspeth, W. T., and Pistor, W. J., The Reaction of the Sera of Different Animals to the Kahn, Kline, Ide, Eagle and Laughlen Tests, Jour. Lab. & Clin. Med., 23:763, 1938.

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EDITOR
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2300 Grant Avenue
El Paso, Texas

ASSOCIATE EDITORS
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1941 SOUTHWESTERN SESSION

Coming to El Paso again after 1940's visit to Tucson, the Southwestern Medical Association held its 27th annual session on November 20-21-22. Under the direction of the President, Dr. William H. Woolston of Albuquerque, a new program plan was carried out. This plan was that one medical school would furnish all the speakers, and coordinate the entire agenda. Northwestern University was chosen to inaugurate the plan for the 1940 session of the Association. Eight instructors of the University faculty were sent to the meeting by this school. Dr. Loyal Davis acted as liaison between the Northwestern group and the program officers of the Association, working with Dr. Woolston and Dr. Louis Breck, Secretary. Development of the scientific program was begun early in the summer, and long before the actual meeting dates the labor was complete. From comment of many registrants, the new plan must be judged as highly effective, and seems in addition to provide a smoothness of operations with a minimum of duplication of effort.

Registration was equal to last year's Tucson meeting, a matter of satisfaction to the officers, as a considerable decrease was anticipated, due to the number of Southwestern physicians called to service with the Army and Navy during the past year. The heavy attendance of the Army physicians from Fort Bliss, William Beaumont General Hospital, and other nearby military establishments, made up for the loss in attendance of the Southwestern group of civilian members. Not quite so many ladies registered this year as did at the 1940 session. Those that did come to El Paso with their doctor husbands enjoyed themselves at various luncheons, breakfasts, and other parties.

The scientific displays were extensive, well illustrated with beautiful photography, X-ray films, diagrams and working models. One wing of the mezzanine floor of the Cortez Hotel was occupied entirely by these exhibits. The commercial houses filled another wing with their booths. Instrument makers, book publishers, drug manufacturerers, staged an unusually attractive display along their "midway."

The day preceding registration for the Association meeting was chosen for the annual session of the Southwestern Chapter of the American College of Chest Physicians. A full day of lectures and demonstrations ended with a dinner meeting, addressed by an Army flight surgeon. Election of officers resulted in the following: President, Dr. Orville Egbert of El Paso; Vice-President, Dr. R. O. Brown of Santa Fe; Secretary, Dr. R. B. Homan, Jr., of El Paso.

The Southwestern Academy of Eye, Ear, Nose and Throat met in concurrent session with the Association. Several clinics were held, as well as daily lectures and breakfasts featuring question periods. Drs. Harry Gradle and Tom Galloway of Chicago were the guests of this Society. At the elections the following were named: President, Dr. H. Brehmer of Albuquerque; Vice-President, Dr. Dake Biddle of Tucson; Secretary, Dr. A. E. Cruthirds of Phoenix.

The business session of the Association was held on noon of the last day. Dr. Woolston presided, to open the session, reading his address (to be published in January issue of SOUTHWESTERN MEDICINE). Later, he yielded the chair to Dr. C. A. Thomas of Tucson, who has served this past year as President-elect. Memorial announcements of the deaths of three members were made. These were Drs. Henry Safford, Jr., of El Paso, Hilliard Camp of

Pecos and R. D. Kennedy of Globe. Due to certain difficulties arising from part-time attendance of sessions by some members, a resolution was passed ordering that hereafter admission to all lectures, etc., sponsored by the Association, will be by badge only. A committee was named by President Thomas to study the Constitution for possible revision, if found necessary. The personnel of this group will be Drs. Orville Egbert, W. W. Waite and Louis Breck, all of El Paso. Resolutions of thanks were passed, expressing the appreciation of the Association to the guest speakers, the Hotel Cortez and the El Paso daily newspapers. Tucson and Albuquerque presented requests for the 1942 session. After discussion, it was voted to meet in Albuquerque next year.

The nominating committee proposed the following names for election to office, and they were unanimously voted in: President-elect, Dr. K. D. Lynch, El Paso; First Vice-President, Dr. J. W. Hannett, Albuquerque; Second Vice-President, Dr. Fred G. Holmes, Phoenix; Secretary-Treasurer, Dr. Louis Breck, El Paso.

Member Board of Managers: Southwestern Medicine (to succeed Dr. R. B. Homan), Dr. Orville Egbert, El Paso.

The annual dinner-dance was held this year at the El Paso Country Club, and was attended by an exceptionally large crowd. The entire meeting from start to finish was one of the most successful in the history of the Association. Various papers presented by the guest speakers will appear in forthcoming issues of the journal. They will contain a great deal of worthwhile material.

Early though it may be — remember — it's Albuquerque in 1942.

TO AMERICA'S DOCTORS

Early this month our country was attacked most foully. American men and women in all walks of life will avenge the deaths of those who fell that Sunday dawn in Pearl Harbor. Of that, let no one doubt. So, again, we are a united people—there can be no more antis or pros of this or that. When we bury the last Jap and German butcher we can go back to our family battles, if we wish. But to once more have that high privilege of disagreeing among ourselves, it is certain that we must pull together in the face of the danger from without. Physicians will do their part, and more. America's sons in the armed services will be accompanied in their tasks by America's doctors. There can be no higher duty than in responding to the needs and the call of the United States.

The *Journal of the American Medical Association* says:

The nation is at war. The Congress has passed an amendment to the Selective Service Act which will call for registration of every man up to the age of 65 and which will place all men under 45 years of age subject to service at the order of the Selective Service boards.

The Procurement and Assignment Service for Physicians, Dentists and Veterinarians was established by order of the President on October 30. Thus the medical profession itself aids in determining proper distribution of the medical profession in supplying the needs of the armed forces and maintaining medical service to civilian communities, public health agencies, industrial plants and other important needs.

At a meeting of the Procurement and Assignment Service held in Chicago at the headquarters of the American Medical Association of December 18, jointly with the Committees on Medical Preparedness of the American Medical Association, the American Dental Association and the American Veterinary Medical Association, plans were drawn for making immediately available to the United States Army and Navy Medical Corps the names of physicians who wish to be enrolled promptly in the service of the government in this emergency.

In each of the corps areas covering the United States a committee is being established, including representatives of medical, hospital, educational, dental and veterinary activities. In the individual states, committees of medical, dental and veterinarian professions are being established through which the corps area committees will exercise their functions. In each county also local committees will provide accurate information regarding the status of each member of the profession concerned.

A physician called by the Selective Service who has not enrolled or who is not on a reserve list obviously serves without a commission during the time that necessarily elapses before a commission is secured.

Page 405 of this issue of Southwestern Medicine exhibits a blank by which physicians may place their names on the list of those ready to go to the immediate aid of America. Please turn now to page 405.

COMMUNICATIONS

Sir:

Enclosed you will find a copy of the tribute written to my husband, Dr. Zachariah Causey by his old friend, Judge J. T. Hood of Lake Charles, Louisiana.

We felt that you might wish to use it in your publication, for there are so many of his friends and acquaintances scattered throughout this part of the country.

Sincerely yours,

LULA KELLY CAUSEY.

[Ed.—The article follows]

ZACHARIAH CAUSEY, M. D.

Dr. Zachariah Causey was born at Healing Springs, Alabama, on April 3, 1877, and died suddenly of a heart attack at his home in Douglas, Arizona, on August 30, 1941. He was a son of Rev. and Mrs. Joe L. Causey, and was one of eight children. After graduating from the high school of his home town he continued his educational studies at Howard College, Birmingham. Adopting medicine as his chosen profession he graduated in medicine at Mobile, Alabama, in 1905 and began the practice of his profession at Healing Springs. After two years he moved to Wiggins in the Southeastern part of Mississippi, and in Wiggins and Tylertown he practiced medicine for some ten years, and in which communities he established a large and enviable practice, and because of his sterling qualities became widely known and loved. In the year 1918 he, with his family, moved to Douglas, Arizona, where he resided up to the time of his death, and where, not only established a large practice, but, became a leader in civic and professional life. He was an active member of the Baptist Church, a member of the Kiwanis Club of Douglas, a member of the Masonic fraternity, and for many years an honored member of the Cochise County Medical Association, the Arizona Medical Society and the American Medical Association.

In the year 1901 he was most happily united in marriage to Miss Lula Kelly, who survives him, and who, likewise, has been active in the church and civic life of Douglas. Of this marriage three sons were born, and all of whom survive: Dr. E. Grady Causey of El Paso; Dr. Joseph S. Causey, a practicing dentist of Douglas, and Dr. Paul Spencer Causey, a physician in Douglas.

But this brief sketch reveals but little of the real life, character and achievements of this friend and brother. The writer of this tribute to his memory has known him as a brother for thirty years. Perhaps an instance of a friendship so warm and so lasting has rarely been experienced and enjoyed as that which has grown deeper and stronger between us as the days and the years have lengthened. When the burdens of the day were heavy and the nights were long in my early struggles, he was there and strengthened me and gave me the courage in those days that enabled me to travel onward. When I needed a friend he came, and not only to me did he come, but to many others in his busy life; and so as I pen these lines, conscious of the fact that this friendship and association has been temporarily interrupted, recalling experience upon experience, occasion upon occasion during these thirty years my own spirit prompts me to address his spirit in the words of Edgar Guest:

"I'd like to be the sort of friend that you have
been to me,
I'd like to be the help that you are always glad
to be,
I'd like to mean as much to you each minute of
the day,
As you have meant, Good Friend of Mine, to me
along the way."

To recount experience upon experience of our own during the long years of our warm friendship, however sacred and dear to me, would perhaps be of less interest to others, and then, too, this tribute would be unduly prolonged to recount the virtues of this friend in the rare combination of qualities exemplified in his life that made him great.

As a father, as a husband, as a friend, as a physician, as a citizen and as a Christian gentleman, he exemplified all that was highest and best.

I write these lines moved with the emotions of a personal friend and as one who loved him dearly, and as one who feels deeply his passing. For several years with advancing old age he has been in poor health, and now death, although sudden, has come as a sort of release. I, too, dear friend, can see old age creeping steadily on me. Some day soon, perhaps sooner than I now expect, the bell will ring for me and I

shall draw the curtains down and lock the doors of this old tenement which has been my abode for these years, and I, too, will follow you.

As I reflect upon these solemn prospects I can think of no finer philosophy than that expressed in the words of Benjamin Franklin, spoken at the burial of his brother, and with these words I close this tribute.

"We are spirits. That bodies should be lent us, while they can afford us pleasure, assist us in acquiring knowledge, or in doing good to our fellow creatures, is a kind and benevolent act of God.

"When they become unfit for these purposes, and afford us pain instead of pleasure, instead of aid become an encumbrance, and answer none of the intentions for which they were given, it is equally kind and benevolent that a way is provided by which we may get rid of them.

"Death is that way.

"Our friend and we were invited abroad on a party of pleasure that shall last forever. His chair was ready first and he has gone before us.

"We could not all conveniently leave together; and why should you and I be grieved at this, since we are soon to follow, and know where to find him."

(Signed) JOHN T. HOOD.

Sir:

The principal object of the American Urological Association is "to encourage the study, improve the practice, elevate the standards and advance the cause of Urology." The simplest way to impress upon neophytes the value of true scientific work is by means of a material award. Hence, we would like to have each year an outstanding medical paper that would warrant a $500.00 check, but if such is not forthcoming we can make several smaller prizes. We are not interested in sterotyped theses for an advanced degree without they represent original work of potential value. The competition is open to all properly trained young urologists, and for that reason we would like to have this chance of a young man obtaining some money at a period when it is badly needed widely publicized, so that all may have an equal opportunity.

Please publish in your magazine the following notice:

"*Urology Award*—The American Urological Association offers an annual award 'not to exceed $500.00' for an essay (or essays) on the result of some specific clinical or laboratory research in Urology. The amount of the prize is based on the merits of the work presented, and if the committee on Scientific Research deem none of the offerings worthy, no award will be made. Competitors shall be limited to residents in urology in recognized hospitals and to urologists who have been in such specific practice for not more than five years.

Essays shall be in the hands of the Secretary, Dr. Clyde L. Deming, 789 Howard Avenue, New Haven, Conn., on or before April 1, 1942."

Yours very truly,

MILEY B. WESSON, Chairman,
Committee on Scientific Research.

NEWS

General

In January of 1941, the Commission announced an examination (Announcement No. 38) to secure Public Health Nurses ($2,000 a year) and Graduate Nurses, General Staff Duty ($1,800 a year) for the Government service. A revised edition of the examination has just been issued in which for Graduate Nurses, General Staff Duty, the time limit for graduation from a school of nursing has been increased to fifteen years. In the original announcement, graduation within the past twelve years was required.

The new examination Announcement No. 38, Revised, provides that persons over the age limit and those who cannot meet the physical requirements may apply for the examination *if they meet all other requirements of the announcement*. The examination announcements for Junior Graduate Nurse, $1,620 a year (Announcement No. 88 of 1941) and Junior Public Health Nurse, $1,800 a year (Announcement No. 103 of 1941) have also been amended to allow overage applicants and those who cannot meet the physical requirements to apply for these examinations. Persons applying under these provisions, if found otherwise eligible, may be appointed for temporary duty ONLY, for the duration of the emergency in the absence of qualified eligibles.

Persons who have been rated eligible under Amendment No. 38 issued in January, 1941, need not file new applications under Announcement No. 38, Revised. Applicants for the positions of Public Health Nurse, Graduate Nurse, Junior Graduate Nurse and Junior Public Health Nurse may be filed until further public notice. Applicants will not be given a written test but will be rated on their education and experience.

Announcements and application forms may be obtained at any first- or second-class postoffice or from the Civil Service Commission, Washington, D. C.

El Paso

The American Board of Otolaryngology has announced the certification of Dr. M. P. Spearman of El Paso as a Diplomate of the Board, following the examinations held in Chicago, October 16, 17, 18, 1941, just prior to the meeting of the American Academy of Opthalmology and Otolaryngology.

Drs. S. A. Schuster and W. E. Vandevere attended the annual session of the American Academy of Opthalmology and Otolaryngology in Chicago, October 19, 1941.

The Staff Meeting of the Hotel Dieu Sisters' Hospital was held Tuesday, November 4.

THE PROGRAM:

1. Acute peritonitis. Fatty degeneration of liver—Dr. Green
   Discussion—Dr. Rheinheimer
2. Rupture of both cerebral hemispheres with hemorrhage—Dr. King
   Discussion—Dr. Rheinheimer

At the regular meeting of the El Paso County Medical Society on November 10, 1941, the following program was given:

1. Management of Retained Cervical Stump—Lt. John C. Weed, M. C., William Beaumont Hospital, formerly instructor of Gynecology at Tulane University
2. College Health Service—Dr. B. F. Jenness

At the meeting of El Paso County Medical Society on October 27, 1941, at Hotel Cortez the program was:

1. Renal Calculi—Dr. Wickliffe R. Curtis
2. The Deep Mycoses (Lantern Slide Demonstration)—Dr. Leslie Smith

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MISCELLANY

DISEASE . . . AND RELIGIOUS FREEDOM

With the spurious justification of "religious freedom," New Jersey may soon be encouraging the spread of communicable disease. Such, at least, will be the State's claim to fame if the emasculated version of Assembly Bill 402 is finally enacted into law. In its original form this Bill, introduced by Mr. Hargrave, would allow no one but physicians to treat venereal disease. The Christian Scientists succeeded in slipping an amendment into the bill which would exempt them from this restriction, thus allowing them to "treat" syphilis and gonorrhea! Only Senator Summerill of Salem voted against this amendment. The bill is now back in the Assembly, and it may be necessary for the friends of public health to withdraw A1402 entirely rather than see it enacted in its present vicious form.

The theory that religious freedom justifies faith healing in venereal disease is utterly false. Syphilis and gonorrhea are communicable diseases, and thus their control is a public health problem, not one of private religious opinion. Second, it must be understood that the precious American right to worship according to one's own conscience can not be perverted to a permission to jeopardize public safety. To take an extreme but pertinent example, could the State allow a religious cult which prescribed assassination of non-believers to flourish. Could murderers be given immunity in such a case, because their crimes were dictates of their religion? The question answers itself. Yet it is not too strong to say that the faith-healers will become public menaces if this amendment is enacted into law. Carriers of syphilis or gonorrhea who do not want to submit to medical care, will be allowed to spread their infection freely while undergoing the mumbojumbo of a cult "cure."

The incredible success of this weird amendment can be explained only on the assumption that our Senators simply did not understand the implications of their approval. They should

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Dear Doctor Seeley:

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2. The date of your birth:
3. The place of your birth:
4. Are you married or single?
5. Have you any children? If so, how many?
6. Do you believe yourself to be physically fit and able to meet the physical standards for the Army and Navy Medical Corps?
7. Have you filled out previously the questionnaire sent to all physicians by the American Medical Association?
8. When and where were you graduated in medicine?
9. In what state are you licensed to practice?
10. Do you now hold any position which might be considered essential to the maintenance of the civilian medical needs of your community? If so, state these appointments:
11. Have you previously applied for entry into the Army or Navy Medical Service? If so, state when, where and with what result (if rejected, state why).

Signature.....

Date..... Address.....

somehow be enlightened before New Jersey becomes an object of nation-wide derision by the enactment of the Christian Science Amendment to the Venereal Disease law.—*J. Med. Soc., N. J.*

ALLERGY IN CHILDREN

1. A state of hypersensitiveness may be acquired congenitally; that is, in utero. The cravings and excessive indulgence in large amounts of protein foods by the pregnant female, particularly in the latter months of gestation, may establish a sensitization to these foods in the unborn child.

2. Undigested food proteins can pass through

HAVE YOU THESE FACTS ON

Recent U. S. government reports indicate a considerable increase in cigarette smoking. As physicians realize, this is a natural development during times of public tension.

This situation, and the advent of recent and very significant research, have greatly increased the interest of the profession in the subject of cigarette smoking.

Naturally, situations arise in which a physician may find it desirable to modify his patients' smoking hygiene. But in any case, the physician is concerned about the smoke itself, the principal carrier of physiologically reactive substances.

Scientific authorities in general agree that the constituent of cigarette smoke with the greatest physiologic significance is nicotine. Any reduction of this substance in a patient's smoking is considered desirable by most physicians.

When the modification of a patient's smoking is indicated, here are facts which should be of interest to you:

The makers of Camel cigarettes arranged for independent tests on 5 of the largest-selling brands of cigarettes. The rate of burning

CONSIDERED

CIGARETTE SMOKING?

and the nicotine content of the smoke of Camels were compared to the averages of the other brands tested.

The results paralleled the findings of prominent medical–scientific authorities.* Here is the most important conclusion:

THE SLOWER-BURNING CIGARETTE PRODUCES LESS NICOTINE IN THE SMOKE

This research also suggests that by advising patients to smoke slower-burning Camels, it is possible to reduce the nicotine content of cigarette smoke *without sacrifice of smoking pleasure.* Thus, the patient's cooperation is assured.

A RECENT ARTICLE by a well-known physician in a leading national medical journal** presents new and important information on this subject, together with other data on the significance of the burning rate of cigarettes. There is a comprehensive bibliography. Let us send you this impressive article for your own inspection. Write to Camel Cigarettes, Medical Relations Division, 1 Pershing Square, New York City.

*J.A.M.A., Vol. 93, No. 15, p. 1110, Oct. 12, 1929
Bruckner, Die Biochemie des Tabaks, 1936
**The Military Surgeon, Vol. 89, No. 1, p. 7, July, 1941

the wall of the gastro-intestinal tract under certain conditions.

The vulnerable period for the establishment of postnatal hypersentiveness is the first two years of life when membranes are especially permeable, new foods are being introduced, and the child is being exposed to new environmental contacts.

For this reason, vegetble soup should be started before individual vegetables, as only small amounts of any single vegetable will be taken. In starting new foods, only one new food should be started at a time.

The diet should be light during an illness, as the intestinal membranes are more permeable to undigested proteins at this time.

3. Inhalation of dry antigenic dusts can result in sensitization.

4. Subjecting native proteins to heat reduces their anaphylactogenicity.

Raw foods may be absorbed in the undigested state, whereas cooked foods are usually broken down into the harmless amino acids before absorption. Cooking foods in water reduces the anaphylactogenicity more than when cooked without it.

5. Repeated infections may result in sensitization to bacterial proteins.

6. Drugs or chemicals entering the body may produce haptens and result in so-called drug idiosyncrasies. Prominent among these are aspirin, quinine, iodine, bromides, phenolphthalein and sulfanilamide.—*Jour. M. A. S. A.*

"I WANNA BE A CAPTAIN"

We have been particularly impressed by the temerity of some physicians who would condescend to enter the service of their country if they could be given on entrance the grade of major or lieutenant-colonel. Such a puerile suggestion would be amusing if it were not tragic. Those not conversant with what responsibility an officer of field grade carries do not realize that there must be a reason why an officer devotes 20-25 years of intensive study and service before he is considered equal to the task of major, lieutenant-colonel and colonel; that such an officer must have technical, tactical, and administrative knowledge which can come only from years of experience; that the further up in rank a medical officer gets the farther he is likely to be from the professional side. The knowledge of how a medical unit functions can come only with the knowledge of the tactical and operative functions of the units which the medical unit is to serve. This serves to illustrate how fultile it is to attempt to discuss such problems with younger men of the profession who are pleased to observe that all the training a medical officer needs can be had within a period of six weeks. It is a good deal like the young West Point graduate who feels he should be started off with the grade of major. If that were feasible, why would the War Department waste 20-25 years of an officer's time and so much money in qualifying young officers. It is a long way from a subaltern to a general officer and a very expensive journey. Let us keep our proper perspective.—*Jo. Ind. St. Med. Assoc.*

APPENDICITIS

1. Acute epigastric or generalized abdominal pain with or without vomiting, which localizes in the right lower quadrant should be considered appendicitis until proven otherwise.

2. Constipation is generally the rule with appendicitis.

3. Never prescribe a cathartic or a sedative for abdominal distress until acute surgical abdomen has been eliminated.

4. Repeated physical examinations, white cell counts, differentials, Schilling Indices, and attention to pulse and temperature curves are necessary to ascertain the progress of appendicitis.

5. Generally, a temperature of 101 degrees or above with a pulse rate of 110 or above in acute appendicitis of more than twelve hours' duration means complications are present or eminent.

6. The prognosis of appendicitis in the extremes of life is always poorer.

7. The treatment of appendicitis is surgical and always demands the immediate services of a competent surgeon.

8. Do not classify appendectomy as a simple operation.

9. Whenever the diagnosis is uncertain and the possibility of appendicitis must be considered, three points must be determined:

(a) Is the case surgical?

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(b) Is watchful expectancy reasonably safe?

(c) Do the findings justify operation?

These important questions must be worked out by competent observers in consultation. In every case the patient should receive that treatment which will safeguard his life.

—*Jo. M. S. M. S.* .

THE MOTHERS' CHARTER

Every potential mother envisions the pleasures and obligations of creating and sustaining new life and is entitled to health and protection for the benefit of herself and humanity and she should have:

1. The inherent right to be well born without inherited or transmitted defect or disease.

2. The inalienable right to protection from disease and harmful influence.

3. The opportunity to learn and know herself during adolescence and maturity and to acquire a knowledge of the origin and significance of human life.

4. The right to protection from pitfalls of married life and to a knowledge of its significance to herself and her potential family.

5. The privilege of proper premarital and preconceptional medical examination and advice and care for herself and her mate.

6. The right of proper and adequate care during pregnancy.

7. The right to receive adequate and necessary care during labor in her home or hospital.

8. The right to have appropriate care following labor in her home or hospital.

9. The right to secure proper and continuing subsequent care for herself and baby.

10. The right of preservation of health and life and happiness for herself and family.—*The American Committee on Maternal Welfare.*

BRAIN TUMOR

The only cardinal symptom of a brain tumor is a non-febrile, steadily increasing alternation of nervous function. But not all cerebral neoplasms progress in this manner—some are ushered in by sudden and startling nervous phenomena. Commonly headache, vomiting, convulsions, failing vision, progressive paralysis, staggering gait, are the initial manifestations of a brain tumor. A careful neurological examination will usually reveal some evidence of dysfunction of the nervous system. When the tumor becomes large enough to cause intracranial hypertension either from blockage of the spinal fluid pathways or from its mass, papilledema usually develops and localizing signs are more common. The spinal fluid rarely gives valuable evidence of tumor but examination of it is useful in eliminating other possible etiological factors. Electro-encephalographic studies are extremely valuable and may be made without inconvenience to the patient. Roentgenograms of the skull frequently show evidence of a tumor. Encephalography and ventriculography are valuable adjuncts but are only necessary when clinical and simpler technical diagnostic aids have been exhausted.—*Ill. Med. Jo.*

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1. Knight, F., and Shelanski, H. A., "Treatment of Acute Anterior Urethritis with Silver Picrate," Am. J. Syph., Gon. & Ven. Dis., 23, 201 (March), 1939.

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BOOK NOTES

NECROPSY: A Guide for Students of Anatomic Pathology. By Bela Halpert, M. D., Assistant Professor of Pathology and Bacteriology, Louisiana State University School of Medicine, and Visiting Pathologist, Charity Hospital of Louisiana at New Orleans. 75 pages—The C. V. Mosby Co., St. Louis, Mo.

The author presents an excellent detailed description of a method of doing postmortem examination based primarily upon the principles and method used by Ghon. Fifty-four pages of the book are devoted to a detailed presentation of the method of performing necropsy, each area and organ being discussed in the order that it is performed at the actual examination. Methods of incision and practical approach to the exposure of different structures are noted; and in each system a list of the pathological changes, as well as the normal features are reviewed. Pointed out are things that should be sought for and recorded. The remaining twenty-one pages of the book are devoted to an appendix, giving case record with autopsy reports illustrating the manner in which the author thinks reports should be made. The volume is excellent reference for the beginner in pathology, as well as a hand-book of value for the experienced pathologist. It is particularly valuable for those who have occasion to do occasional autopsies. The book fills a very definite need. The price is $1.50.—*L. O. Dutton.*

HANDBOOK OF COMMUNICABLE DISEAESES: By Franklin H. Top, A. B., M. D., M. P. H., Director, Division of Communicable Diseases and Epidemiology, Herman Kiefer Hospital and Detroit Department of Health: Associate Professor of Preventive Medicine and Public Health, Wayne University, College of Medicine: Special Lecturer in Communicable Diseases and Epidemiology, University of Michigan: Major, Medical Reserve Corps, United States Army—And Collaborators. 73 Text Illustrations and 10 Color Plates. C. V. Mosby, St. Louis, Mo. Price $7.50.

In this volume the author has collected a considerable amount of pertinent information concerning communicable diseases. He has used the term "communicable" in its broad sense, including under discussion bacterial, virus, the rickettsial, protozoa, and insect diseases. The discussion of each subject is clear and concise and not burdened with a great deal of theoretical consideration. The material is well organized. There are a good many excellent illustrations, and there is a full bibliography at the end of

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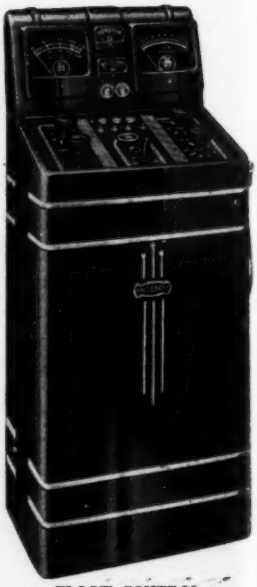

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each chapter. Each condition is discussed from the point of etiology, epidemiology, immunity, pathology, symptoms, diagnosis, prognosis, treatment, and what is often omitted in texts—a section on nursing care. In addition, measures for prevention of the spread of these communicable diseases are discussed. On the whole, the volume can be highly recommended.—*L. O. Dutton.*

SHOCK TREATMENT IN PSYCHIATRY. A MANUAL BY LUCIE JESSNER, Ph. D., M. D., Resident Psychiatrist, Baldpate, Georgetown, Mass.; Graduate Assistant in Psychiatry, Mass. General Hospital; Assistant in Psychiatry, Beth-Israel Hospital, Boston, and V. GERARD RYAN, M. D., Associate Psychiatrist, Elmcrest Manor, Portland, Conn.; Assistant in Psychiatry, Harvard Medical School. Instruction by HARRY C. SOLOMON, M. D., Clinical Professor of Psychiatry, Harvard Medical School; Chief of Therapeutic Research, Boston Psychopathic Hospital.

This monograph presents, in brief, a discussion of the three most common methods of shock therapy in psychiatry. In view of the fact that insulin shock therapy has been in use longer, the greater part of the book is devoted to this type of therapy. The authors present their technique of administration in detail together with complications and contra-indications. A minimum

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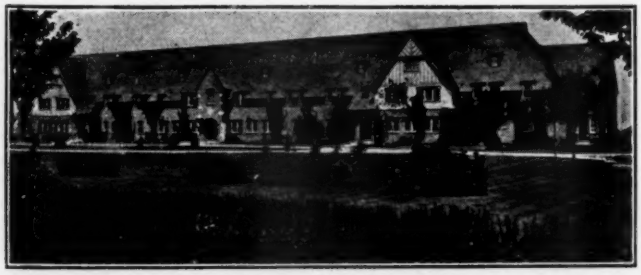

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—*V. M. Ravel.*

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